

2008 University of Arkansas at Pine Bluff Combined Research and Extension Annual Report of Accomplishments and Results

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I. Report Overview

1. Executive Summary

The 1890 Research and Extension programs are administered by the School of Agriculture, Fisheries and Human Science at the University of Arkansas at Pine Bluff. The School consists of three academic departments, Agriculture, Fisheries and Human Science. Federal, state and private funds of more than 4.2 million supported sixty-two ongoing projects with most of the research projects conducted at the UAPB campus site, with some activities occurring at the UAPB Lonoke and Marianna farm sites. Additional studies were conducted on cooperating farm sites, the Felsenthal National Wildlife Refuge, Arkansas River, and abroad.

Faculty submitted external grant proposals which resulted in nineteen newly funded projects that added \$849,124 in funding to support Research and Extension activities. The knowledge gained by these research activities were extended to families and communities through a variety of outreach and Extension programs. The extension program has structured programs in 29 counties with staff housed in 10 counties. Research and Extension in Agriculture are conducted in the areas of plant science, animal science and agricultural economics. The efforts in the Department of Human Science are directed toward human nutrition, food safety and family life. The Agriculture and Human Science components of the Research and Extension programs are designed to provide information and assistance to small-scale and limited-resource farmers and disadvantaged families and youth. The Aquaculture/Fisheries program supports both the state's aquaculture industry and recreational fishing as an avenue for enhancing tourism as an economic engine for the state.

Research and Extension in Agriculture are conducted in the areas of plant science, animal science and agricultural economics. The efforts in the Department of Human Science are directed toward human nutrition, food safety and family life.

The Agriculture and Human Science components of the Research and Extension programs are designed to provide information and assistance to small-scale and limited-resource farmers and disadvantaged families and youth. The Aquaculture/Fisheries program supports both the state's aquaculture industry and recreational fishing as an avenue for enhancing tourism as an economic engine for the state.

Total Actual Amount of professional FTEs/SYs for this State

Year:2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	23.5	0.0	21.3
Actual	0.0	14.4	0.0	15.1

II. Merit Review Process

1. The Merit Review Process that was Employed for this year

- Internal University Panel
- Expert Peer Review

2. Brief Explanation

Our research and Extension programs are monitored annually through a performance appraisal system that assures adherence to goals planned. Each department in the school of Agriculture, Fisheries and Human Sciences has an internal peer review system that evaluates research proposals prior to their implementation.

The Merit Review Process in the Aquaculture/Fisheries Center resulted in review of 27 manuscripts that were subsequently submitted for consideration in refereed journals and 18 proposals submitted to competitive programs.

An external expert peer review of the Aquaculture/Fisheries Center was conducted in April 2008, in conjunction with a review of the proposal for a Ph.D. program in Aquaculture/Fisheries. Experts from Mississippi State University, Purdue University, and Iowa State University spent three days reviewing the Center. The review team concluded that, "the Department of Aquaculture and Fisheries has proposed, and is ready to add, what should become a nationally respected and competitive Ph.D. degree in Aquaculture and fisheries." The team particularly noted the research productivity and fish nutrition programs. The review team also noted that, "In the last 10 years, the UAPB Aquaculture and Fisheries program has become one of the three or four most productive aquaculture research programs in the southern United States."

III. Stakeholder Input

1. Actions taken to seek stakeholder input that encouraged their participation

- Use of media to announce public meetings and listening sessions
- Targeted invitation to traditional stakeholder groups
- Targeted invitation to traditional stakeholder individuals
- Targeted invitation to selected individuals from general public
- Survey of traditional stakeholder individuals

Brief Explanation

In July 2008 an Interim Director was appointed to replace the retired Director/Extension Administrator of the 1890 program at UAPB. The Interim Director used the formal stakeholder input developed by the Agriculture Research & Extension Council and the Aquaculture-Fisheries Center of Excellence Advisory Committee as part of the orientation process for the new position. He also evaluated the makeup of these two stakeholder groups for effectiveness in the input process. Although both stakeholder groups were effective, the Agricultural group showed an unacceptable level of none participation by members. Therefore, this year we are identifying potential new members for the Agriculture Research & Extension Council. The group will meet again to provide program input during year 2009.

The UAPB Aquaculture/Fisheries Center (AFC) prides itself on the level, scope, and effectiveness of its interactions with stakeholders. Input and interaction with stakeholders occurs on an almost daily basis with personnel in the Center. Individual farmers, representatives of trade associations, and board members interact frequently with Center Researchers and Extension Specialists. The interaction often is initiated with a request for some specific type of information. The specific questions often expand into broader discussions as the state of knowledge in particular areas through which additional research needs become readily apparent.

For the natural fisheries Research and Extension areas, the primary stakeholder defined for the UAPB Aquaculture/Fisheries Center is the Arkansas Game and Fish Commission (AGFC). The increased interaction with the Arkansas Game and Fish Commission in recent years has facilitated greater communications. Formal input is obtained through the representation of the Arkansas Game and Fish Commission on UAPB'S National Aquaculture/Fisheries Advisory Council. Additional opportunities for interaction and input are available at the statewide meeting of the Arkansas Chapter of the American Fisheries Society (AFS). Many AGFC managers and biologists attend these meetings. Also, the increasing involvement of Center scientists on committees of the Southern Division of the AFS and at the national level provide opportunities for additional input because a number of AGFC personnel continue to be active in those settings.

2(A). A brief statement of the process that was used by the recipient institution to identify individuals and groups stakeholders and to collect input from them

1. Method to identify individuals and groups

- Use Advisory Committees
- Open Listening Sessions
- Use Surveys

Brief Explanation

Stakeholder input is a core component of all 1890 research and Extension programs. Means for acquiring input varies depending upon the nature of the research or Extension program and the diversity of relevant stakeholders. These include local and state agencies, community groups, producers and other targeted audiences, as well as business and industry groups. Producer meetings, advisory groups, conferences, and focus group discussions are major means for gaining input.

Our stakeholder input process is structured individually by departments/schools to represent the differences in audiences served. This approach is taken because the clientele needs for research and Extension – in programs other than aquaculture are broad in scope, local in nature and geographically limited. While the Aquaculture Program provides research and Extension support for all aquaculture producers in the state, other programs support under-served and diverse audiences in a specific number of counties.

The Aquaculture-Fisheries Center of Excellence Advisory Committee

The primary advisory committee that provides feedback and input into the UAPB Aquaculture/Fisheries Program is the National Aquaculture/Fisheries Advisory Council. It includes representation from catfish, baitfish, and sportfish farms, feed mills, Arkansas Game and Fish Commission, U.S. Fish and Wildlife Service, and other university programs. Some committee members also serve as representatives for other state and national aquaculture industry organizations, so that these individuals contribute a much broader perspective to advisory committee meetings than their formal capacity might otherwise suggest. At the most recent meeting on February 25, recommendation included continued work on new feed formulation, marketing structures, cash flow and financial management, diseases, new chemicals approved for non-food fish, new hatchery techniques for public stocking programs, and more training for AGFC biologists. Lake Village, Arkansas, to plan the mid-year and annual educational meetings that are hosted by UAPB for the Catfish Farmers of Arkansas. The Chicot County Extension programs also derive their input from this committee's advice. Lonoke County gain stakeholder input into program development from these meetings. The Lonoke County Agricultural Office, the operates as part of the 1862 State Extension Service also hosts an annual advisory committee meeting to acquire aquaculture industry input and feedback for their Extension program. UAPB Aquaculture/Fisheries Center staff is invited to participate in these meetings to facilitate information transfer between the 1890 Cooperative Extension Program, the 1862 State Extension Service and industry members.

In addition to the National Fisheries Advisory Council, there are a number of advisory subcommittees that specialize in specific areas and meet regularly to contribute towards the Aquaculture/Fisheries Center's program planning and development. These include the UAPB Facilities Subcommittee, the Catfish Subcommittee, and the Lonoke Aquaculture Subcommittee. Members of the Facilities Subcommittee meet on a regular basis to plan UAPB Aquaculture/Fisheries Center facility expansion and develop resources for new facilities.

The Catfish Subcommittee meets twice a year in

The Lonoke Aquaculture Subcommittee meets once a year to plan the annual UAPB Lonoke Aquaculture workshop, which is primarily focused on bait and ornamental fish aquaculture. The Extension programs operating in

The Young Scholars Advisory Committee Structure

A Young Scholars Task Force, including some of the children and parents enrolled in the program, oversees the planning, implementation and evaluation of the program in both counties. One of the children serves as chair of the task force while another child serves as secretary. In addition to program parents and children, membership includes representatives of partnering agencies, governmental, officials, and state legislators.

Our specialists in agriculture, family and community programs work with 1862 county agents, as requested, to organize clientele groups through community-based organizations, schools and the faith-based community. Both research and Extension programs in Aquaculture/Fisheries and in Agriculture and the Family and Consumer Sciences Extension program utilize an advisory committee structure as a major component of the stakeholder input process. The Human Sciences Research program employs other mechanisms to obtain stakeholder input.

2(B). A brief statement of the process that was used by the recipient institution to identify individuals and groups who are stakeholders and to collect input from them

1. Methods for collecting Stakeholder Input

- Meeting with traditional Stakeholder groups
- Survey of traditional Stakeholder groups
- Meeting with traditional Stakeholder individuals
- Survey of traditional Stakeholder individuals

Brief Explanation

Informal methods of collecting stakeholder input occur regularly with faculty, researchers and extension specialists interacting with clientele during program presentations, direct farm contacts and field days.

Individual department advisory committees have been utilized for individual program input. Examples of this have been provided in other sections of this report.

Research and extension work with program partners and agencies have provided additional program input.

3. A statement of how the input was considered

- In the Budget Process
- To Identify Emerging Issues
- Redirect Extension Programs
- In the Action Plans
- To Set Priorities

Brief Explanation

Informal input from stakeholders is presented and discussed at formal meetings with research faculty and staff. Strategies will be developed to address identified concerns as appropriate.

Faculty are represented on all structured committees for purposes of participating in the discussion and gathering the input from stakeholders that will later be presented back to faculty and staff. One example of input from a structured committee currently being implemented is the Foundation Seed program for sweet potatoes. The February 2006 meeting of the Agriculture, Research and Extension Advisory Committee raised the issue of support for the sweet potato industry emerging in Eastern Arkansas. The input from the session was incorporated into outreach efforts (more extensive efforts with Sweet Potatoes, enhanced technical support for value-added processing, and expansion of the role and geographic scope of the Small-Farm Program). Each issue was addressed through program initiatives as allowed by available funding.

Brief Explanation of what you learned from your Stakeholders

Input from stakeholders through the agricultural Extension agents and program assistants in the field continue to play a major part in program development. The group of farmers and packing house operators continue to voice the need to support the growing sweet potato production in Arkansas. Sweet potato research was expanded in the area of product development and the Extension program has given increased attention to farmer production problems.

The Aquaculture-Fisheries Advisory Committee continues outstanding input for the research and Extension programs. This year the Committee focused on the developing the Ph.D. program in Aquaculture-Fisheries. The Committee strongly supported the development of this graduate program because direct impact it would have on the research and Extension

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	1561120	0	1837968

2. Totaled Actual dollars from Planned Programs Inputs				
Extension			Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	0	1674771	0	1727936
Actual Matching	0	1561121	0	1837968
Actual All Other	0	231286	0	0
Total Actual Expended	0	3467178	0	3565904

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous years				
Carryover	0	330271	0	277016

V. Planned Program Table of Content

S. NO.	PROGRAM NAME
1	Human nutrition
2	Horticulture Production
3	Food Animal Production and Management
4	Families, Youth, and Communities
5	Improved Management Options to Improve Catfish Production Efficiencies and Lower Costs
6	Alternative Crop Production
7	Extension Livestock Management Program
8	Small Farm Program
9	Herbs, Spices, and Medicinal Crops
10	Value Added Products
11	Reduce Losses Due to Catfish Diseases
12	Agricultural Policy
13	Aquaculture Equipment and Information Development Program
14	Improving Hatchery Production Efficiency
15	Breeding and Biotechnology
16	Improving Disease Status for Baitfish Production and Marketing
17	Controlling Predators of Larval Fish
18	Improving Management Techniques for Baitfish
19	Research Verification
20	Aquaculture Alternatives in Arkansas
21	1890 Family Resource Management
22	Farm Pond and Community Fishing Pond Management
23	Aquatic Plant Management in Arkansas Ponds
24	Improving Largemouth Bass Fishing in the Arkansas River
25	Water and Environmental Quality
26	Youth Fishing and Aquaculture Education
27	Cropping Systems
28	1890 Family and Child Development Program
29	Arkansas Ag Adventures - Agricultural Awareness

Program #1

V(A). Planned Program (Summary)

1. Name of the Planned Program

Human nutrition

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
702	Requirements and Function of Nutrients and Other Food Components		50%		50%
703	Nutrition Education and Behavior		50%		50%
Total			100%		100%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	0.0	0.9
Actual	0.0	0.0	0.0	0.4

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	0	105829
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	45330
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

The plan of work 2009-2013 was approved in end of November 2008. Currently, materials have been purchased and the shelf-life study will not start until summer 2009.

2. Brief description of the target audience

No target audience at this point; ongoing plan for microbiological testing of yogurts.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	50	50	50	250
2008	0	0	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of classes per month, number of shopping workshops, number of tasting workshops, and number of recipe demonstrations.

Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Attitudes, Opinions, Awareness, knowledge, education, behavior, increased consumption of low fat dairy products, reduced Body Mass Index (BMI), increased Bone density, improvement of foods offered at home and in schools, health.

Outcome #1

1. Outcome Measures

Attitudes, Opinions, Awareness, knowledge, education, behavior, increased consumption of low fat dairy products, reduced Body Mass Index (BMI), increased Bone density, improvement of foods offered at home and in schools, health.

Not reporting on this Outcome for this Annual Report

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Appropriations changes
- Government Regulations
- Other (Parents, School policies)

Brief Explanation

Outcomes planned were not performed because the old program was not completed and was extended until September 2008. The new plan of work submitted in fall 2008 was approved November 20, 2008.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)
- Comparisons between program participants (individuals, group, organizations) and non-participants

Evaluation Results

Key Items of Evaluation

Program #2

V(A). Planned Program (Summary)

1. Name of the Planned Program

Horticulture Production

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants		100%		100%
Total			100%		100%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	1.7	0.0	0.1
Actual	0.0	1.2	0.0	0.1

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	229884	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	135001	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- 1) Conducted 16 training sessions (a 45% increase from 2007) that involved 361 participants.
- 2) Wrote 12 news columns/articles on various production issues on horticultural crops that reached an audience of over 1000.
- 3) Revised one horticultural crops publication (Year-Round Home Garden Planting Chart).
- 4) Conducted 18 farm visits that involved one on one technical advising.
- 5) Continued with 2 research projects, namely, Blackberry cultivar evaluation trial and snap bean cultivar evaluation trial.
- 6) Provided direct technical assistance to 8 Community gardens that provided a source of fresh and nutritious vegetables and fruits to low income community members

2. Brief description of the target audience

The target audience is the small-scale and limited resource farmers. Many of these individuals lack adequate economic, technical or social resources to maintain viable operations on row-crops. Horticultural crop production helped these small-scale and limited resource farmers increase farm profitability.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	125	200	15	25
2008	325	1000	36	100

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	1	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- 1) Conduct training of County Extension staff, master gardeners, limited resource farmers and 4-H club members, 2) write monthly news columns/articles addressing gardening trends and concerns, and 3) continue reviewing and developing publications/factsheets

Year	Target	Actual
2008	2	16

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Develop monthly columns/articles addressing production trends and concerns

Outcome #1**1. Outcome Measures**

Develop monthly columns/articles addressing production trends and concerns

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	12	12

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Limited-resource, small-scale farmers and extension agents. To improve knowledge and skills in horticultural crops production.

What has been done

12 articles/columns were developed providing current production information and were featured in over 20 newspapers in Arkansas. The articles were also posted at www.uaex.edu.

16 training sessions involving 361 participants were conducted.

1 Extension publication was revised.

Results

Over 1361 stakeholders received knowledge in current horticultural crops production techniques through personal contacts, local newspapers and/or www.uaex.edu website.

4. Associated Knowledge Areas

KA Code	Knowledge Area
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants

V(H). Planned Program (External Factors)**External factors which affected outcomes**

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Public Policy changes
- Competing Public priorities
- Competing Programmatic Challenges

Brief Explanation

Natural disasters: 1). Frost damage on fruit crops in the state in April 2007 destroyed yield data on "Blackberry cultivar evaluation trial" requiring an extension of yield data collection through 2010.

2). Heavy rains in May 2008 destroyed the "Snap bean cultivar evaluation trial" extending the conclusion of the project to 2009.

V(I). Planned Program (Evaluation Studies and Data Collection)**1. Evaluation Studies Planned**

- Before-After (before and after program)
- During (during program)

Evaluation Results

Evaluation was not conducted during this period.

Key Items of Evaluation

Program #3

V(A). Planned Program (Summary)

1. Name of the Planned Program

Food Animal Production and Management

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
302	Nutrient Utilization in Animals		100%		100%
	Total		100%		100%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.1	0.0	2.5
Actual	0.0	0.1	0.0	1.8

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	5297	0	217975
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	142278
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

For the swine, one feeding trial was completed in 2008. This involved testing the maximum inclusion level of cottonseed meal (CSM) in diets for breeding hogs and finishing pigs. Cottonseed meal is abundant in Southeast Arkansas and is cheaper than the preferred soybean meal (SBM). Increasing the level of CSM in diets for pigs has its merits and also side effects that can be measured in animal responses and is part of the basis for on-going feed trials. This is part of the on-going efforts of researching alternative energy and protein feeds that are cheap and locally available. More trials on protein feeds will continue in 2009 and results reported in 2010.

For the meat goats, further feeding trials using crop by products e.g. whole cottonseed, cotton seed hulls and broken rice continued in 2008. It was found that using alternative feeds, mainly crop by products, had no adverse effects on animal performance (gain, feed efficiency, etc.). Limited resource goat farmers in this region should lower their production costs considerably by adopting the research findings of work completed at UAPB Farm involving meat goats.

2. Brief description of the target audience

The targeted audience included small limited resource farmers in Southeast Arkansas, college students, high school students and Extension agents.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	60	120	130	50
2008	50	150	120	80

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	1	1	
2008	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- There will be expected reduction in the cost of production (input) relative to the meat goats and pigs which will result to improvement in the economic earnings of the small farmers. Indicators to be measured are: 1) the feed efficiency for both goats and swine; 2) feed conversion; rate of consumption of crop by-products and forages, (relative weight gain (growth) of goats and swine stocked in varying densities.

Year	Target	Actual
2008	2	2

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Number of papers,abstracts,reports and conference presentations

Outcome #1**1. Outcome Measures**

Number of papers,abstracts,reports and conference presentations

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	4	2

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

The cost of producing meat goats and market pigs is very prohibitive for limited resource farmers in Southeast Arkansas. Feed costs account for more than 70% of the production costs for meat goats and finished pigs. As a result many limited resource farmers have either opted out of these animal enterprises or are not ready to invest in them. Researching into alternative feeds that are cheaper and locally available should help reverse the trend, providing some savings and better economic returns for these farmers.

What has been done

The least-cost feeds that we continued testing at UAPB Farm in 2008 for both meat goats and swine should offer alternatives to the expensive commercial feeds sold at the local animal feed stores. Dissemination of these research findings has been achieved somewhat and more effort will be devoted in future at informing and sharing these findings with more farmers and other stake holders.

Results

Techniques that were used to mix locally available feeds (mostly crop by products) were disseminated and shared with the target group and other stakeholders with some degree of success. Alternative feeds e.g. whole cottonseed, brewers rice and oil seed meals that were used in studies with goats and swine should be acceptable to limited resource farmers because they are cheaper and abundantly available in Southeast Arkansas. Thus, adoption of recommendations should improve farmer income and quality of life.

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals

V(H). Planned Program (External Factors)**External factors which affected outcomes**

- Natural Disasters (drought,weather extremes,etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Populations changes (immigration,new cultural groupings,etc.)

Brief Explanation

Inadequate animal research facilities constrained the scope of our research effort. This factor is influenced by multiple factors listed above. However, construction for a swine finishing unit was started and progressed well during the period under review. Upon completion, this facility should greatly increase our capability of conducting good research in the swine area and also help meet, in part, our research facility needs.

V(l). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)

Evaluation Results

Key Items of Evaluation

Program #4

V(A). Planned Program (Summary)

1. Name of the Planned Program

Families, Youth, and Communities

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
802	Human Development and Family Well-Being		100%		100%
	Total		100%		100%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	0.0	1.3
Actual	0.0	0.0	0.0	0.4

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	53176
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

During Summer 2007, directors from infant and toddler, preschool childhood, and family day care homes directors participated in the pilot study. Participants were invited to attend a luncheon and workshop to learn more about the study on July 13, 2007. Mrs. Onika Luster, a licensure specialist, from the JeffersonCounty's DHHS was the guest speaker. She presented relevant information on grants and licensure.

During the Summer and Fall Semesters 2007, three (3) codebooks were developed and designed for three (3) pilot survey instruments: A Survey Evaluating Quality in Early Childhood Programs (Infant and Toddler; Preschool; and Family Home). The pilot surveys were coded with a code number for data entry.

Data from the pilot study were entered and analyzed during the Fall 2007 and Spring 2008 semesters, using SPSS 12.0 software program. Seven participants completed a preschool survey, four completed an infant/toddler survey, and two completed a family home survey. The pilot surveys were noted for suggestions, concerns with the instrument, and comments by the participants. The pilot participants' responses were taken into consideration and changes/corrections will be incorporated into the actual survey.

During the Summer and Fall 2008 semesters, validity was established and reliability analyses were run on the three pilot surveys.

During the Spring 2009 semester, prospective daycare directors in Southeast Arkansas and Jefferson County, Arkansas, have been contacted about the number of teachers/parents associated with their center. These directors also have been contacted about their participation in our study. Several daycare directors from 10 Arkansas counties have agreed to participate in our study, including Jefferson County. A cover letter with detailed instructions for completing and returning a survey will be organized into packets to be mailed. A code number will be placed on a survey for tracking purposes. The surveys will be sent to prospective directors, teachers, and parents in Southeast Arkansas' infant/toddler, preschool, and family home daycare centers to obtain their responses.

Once data is collected from licensed early childhood program directors on their perception of quality, an on site two-hour observation using the environmental rating scales will be conducted at each center responding to the survey and agreeing to participate further in the study. It is expected that at least 50% of the childcare facilities will participate in the full study. The rating scales are used to measure quality in childcare centers and are based on a one-to seven-point scale, on a continuum of one for poor quality and seven for excellent quality. The reported rating scores given by the teachers, directors, and parents will be compared to the environmental rating scale score to determine consistency between perceptions reported on the survey and actual scores obtained during the observation. Informational meetings concerning accreditation and the Arkansas Quality Approval System process will be introduced to center directors during the observational visit.

2. Brief description of the target audience

Our target audience will be the day care home operators, day care center directors, centers' employees, children in day care centers, teachers, and parents in Jefferson County and Southeast Arkansas' early childcare centers, head start centers, and family daycare homes.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	134	135	500	500
2008	20	100	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	1
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Day care home operators, day care center directors, centers' employees, children in day care centers, teachers, and parents of family day care home, day care, and headstart centers in Jefferson County and Southeast Arkansas.

Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Directors, teachers, and parents in early childhood programs, head start centers, and family daycare homes in Jefferson County and Southeast Arkansas will be assessed for center quality and will serve as our outcome targets.

Outcome #1

1. Outcome Measures

Directors, teachers, and parents in early childhood programs, head start centers, and family daycare homes in Jefferson County and Southeast Arkansas will be assessed for center quality and will serve as our outcome targets.

Not reporting on this Outcome for this Annual Report

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Programmatic Challenges
- Populations changes (immigration,new cultural groupings,etc.)

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- Comparisons between program participants (individuals,group,organizations) and non-participants

Evaluation Results

Key Items of Evaluation

Program #5

V(A). Planned Program (Summary)

1. Name of the Planned Program

Improved Management Options to Improve Catfish Production Efficiencies and Lower Costs

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
302	Nutrient Utilization in Animals		20%		20%
307	Animal Management Systems		20%		20%
308	Improved Animal Products (Before Harvest)		20%		20%
601	Economics of Agricultural Production and Farm Management		15%		15%
602	Business Management, Finance, and Taxation		15%		15%
603	Market Economics		10%		10%
Total			100%		100%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.8	0.0	0.7
Actual	0.0	0.5	0.0	0.9

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	103434	0	225808
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	51154	0	252014
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Conduct field trials
 Conduct method demonstrations
 Publish results

- Give presentations
- Develop individual enterprise budgets for catfish producers
 Develop news articles on improving farm efficiency
 Develop producer workshop targeting efficiency improvements for producers
 Work with catfish industry to develop copper sulfate use protocol
 Work with fish processing plants in valuing use of copper sulfate for off flavor control.
 Work with industry suppliers who manufacture copper sulfate on proper use of the product.

2. Brief description of the target audience

Catfish farmers throughout Arkansas County Extension agents Grocery store managers Consumers Commercial catfish producers Interested potential producers Commercial Bankers Copper sulfate manufacturers and suppliers

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	13	100	0	0
2008	1837	11850	52	5

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	6	8	14

V(F). State Defined Outputs

Output Target

Output #1**Output Measure**

- Number of Refereed Journal Articles

Year	Target	Actual
2008	2	8

Output #2**Output Measure**

- Number of Abstracts Published

Year	Target	Actual
2008	4	22

Output #3**Output Measure**

- Number of Presentations at Scientific Meetings

Year	Target	Actual
2008	7	29

Output #4**Output Measure**

- Number of Trade Magazine Articles

Year	Target	Actual
2008	3	6

Output #5**Output Measure**

- Number of Catfish Farms Adopting Recommendations

Year	Target	Actual
2008	92	55

Output #6**Output Measure**

- Number of Catfish Acres Using Recommendations

Year	Target	Actual
2008	16200	32000

Output #7**Output Measure**

- Number of Ponds in Copper Sulfate Demonstrations

Year	Target	Actual
2008	5	1

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O No.	OUTCOME NAME
1	Number of commercial pond owners informed of the options to improve water circulation through aerator placement
2	Number of farm managers considering increased pond circulation in the placement of new aerators
3	Number of producers responding to project results
4	Number of producers willing to test successful ingredients or feeding strategies on a commercial scale
5	Percent of CFAR members aware of effect aerator placement has on circulation
6	Number of Farmers Gaining Access to Catfish Market Information
7	Number of Stores Adopting Recommendations
8	Number of Stores Increasing Sales of Catfish
9	Number of Arkansans Gaining Access to Catfish Management Information
10	Number of Arkansans Adopting Management Recommendations
11	Number of Arkansans Increasing Efficiency, Profitability Through Improved Catfish Management
12	Number of diets with new ingredients that are commercially available, or number of new feeding strategies implemented by industry

Outcome #1

1. Outcome Measures

Number of commercial pond owners informed of the options to improve water circulation through aerator placement

2. Associated Institution Types

•1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Farm managers have asked about aerator placement

What has been done

Farm managers have been encouraged to position the aerator for maximum circulation. Improved pond circulation can lead to better water quality, which in turn leads to improved fish health and growth.

Results

No producers have moved aerators due to cost or other considerations

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

Outcome #2

1. Outcome Measures

Number of farm managers considering increased pond circulation in the placement of new aerators

2. Associated Institution Types

•1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Farm managers asked about aerator placement

What has been done

Farm managers were encouraged to position the aerator for maximum circulation. Improved pond circulation can lead to better water quality, which in turn leads to improved fish health and growth.

Results

At present, no producers have moved aerators due to cost and other considerations

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

Outcome #3**1. Outcome Measures**

Number of producers responding to project results

2. Associated Institution Types

•1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	75	10

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Farm managers inquired about aerator placement

What has been done

Farm managers were encouraged to position the aerator for maximum circulation. Improved pond circulation can lead to better water quality, which in turn leads to improved fish health and growth.

Results

At present, no producers have moved aerators due to cost and other considerations

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

Outcome #4**1. Outcome Measures**

Number of producers willing to test successful ingredients or feeding strategies on a commercial scale

2. Associated Institution Types

•1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	3	26

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Commercial production of channel catfish is relatively inefficient. Feed accounts for up to 50% of production costs. Producers are interested in novel diet ingredients and feeding strategies that can improve the profitability of their industries. Human consumers are interested in products that taste good and are beneficial for health

What has been done

A suite of alternative diet ingredients has been screened in pilot studies for potential efficacy in fully studies. Cuphea meal, sweet potato tops, Alaskan pollack visceral meal, and feed additives such as prebiotics and probiotics have been tested.

Results

Candidates for alternative protein sources are cuphea meal, soybean concentrates, poultry meals, and invertebrate meal. Candidates for lipid sources are non-fish sources of n-3 fatty acids such as canola, flaxseed oil, and algal concentrates. Prebiotics and probiotics may include Grobiotic, Daily, and Bacillus spores. Cuphea meal, sweet potato tops, and APVM were all effective ingredients at the levels tested. Flaxseed oil and Grobiotic enhanced catfish growth at low temperatures.

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals

Outcome #5

1. Outcome Measures

Percent of CFAR members aware of effect aerator placement has on circulation

2. Associated Institution Types

•1890 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	30	20

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Farm managers inquired about aerator placement

What has been done

Farm managers were encouraged to position the aerator for maximum circulation. Improved pond circulation can lead to better water quality, which in turn leads to improved fish health and growth.

Results

No producers have moved aerators due to cost or other considerations.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

Outcome #6

1. Outcome Measures

Number of Farmers Gaining Access to Catfish Market Information

2. Associated Institution Types

•1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	979

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)****What has been done****Results**

New advertising and policy approaches have been defined and adopted by the catfish industry. A new radio-based promotional program that reached listeners in the Hot Springs area resulted in 2 grocery stores switching from imported to U.S. produced catfish in response to consumer demand. The food service provider to UAPB was asked to switch from imported to U.S. farm-raised catfish as a result of student demand following the advertising programs developed by catfish farmers based on the new marketing information.

4. Associated Knowledge Areas

KA Code	Knowledge Area
603	Market Economics

Outcome #7**1. Outcome Measures**

Number of Stores Adopting Recommendations

2. Associated Institution Types

•1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	2

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Low-cost imports of basa/tra from Vietnam and catfish from China have been substituted by grocery stores for U.S. farm-raised catfish.

What has been done

Marketing research generated new information on how consumers perceived the importance of country of origin in seafood.

Results

New marketing information was used by the Arkansas Catfish Promotion Board to promote positive attributes of U.S. farm-raised catfish. At least two retail grocery stores and one university campus switched to offering only U.S. farm raised catfish.

4. Associated Knowledge Areas

KA Code	Knowledge Area
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Outcome #8**1. Outcome Measures**

Number of Stores Increasing Sales of Catfish

2. Associated Institution Types

•1890 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	2

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Low-cost imports of basa/tra from Vietnam and catfish from China have been substituted by grocery stores for U.S. farm-raised catfish.

What has been done

Marketing research generated new information on how consumers perceive the importance of country of origin in seafood.

Results

New marketing information was used by the Arkansas Catfish Promotion Board to promote positive attributes of U.S. farm-raised catfish. At least two retail grocery stores and one university campus switched to offering only U.S. farm-raised catfish.

4. Associated Knowledge Areas

KA Code	Knowledge Area
603	Market Economics

Outcome #9**1. Outcome Measures**

Number of Arkansans Gaining Access to Catfish Management Information

2. Associated Institution Types

•1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	50	864

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Increasing feed prices in 2008 created severe financial difficulties for many catfish farmers

What has been done

Pond studies and economic models developed continue to be used to refine recommendation for optimal stocking and feeding of catfish. Mathematical programming models have been developed to identify profit-maximizing combinations of on-farm production of catfish fingerlings, stockers, and food fish. Winter feeding studies have been conducted to compare effects of feeding and not feeding over the winter period.

Results

User friendly models were developed to enable catfish farmers to adapt profit-maximizing research recommendations to their individual farms. Careful cash flow planning resulted in farms successfully surviving a very difficult financial period.

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management

Outcome #10

1. Outcome Measures

Number of Arkansans Adopting Management Recommendations

2. Associated Institution Types

•1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	65

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Increasing feed prices and declining catfish prices in 2007 have created financial difficulties for many catfish farmers.

What has been done

Pond studies and economic models developed continue to be used to refine recommendations for optimal stocking and feeding of catfish. Mathematical programming models have been developed to identify profit-maximizing combinations of on-farm production of catfish fingerlings, stockers, and food fish. Winter feeding studies have been conducted to compare effects of feeding and not feeding over the winter period.

Results

User-friendly models were developed to enable catfish farmers to adapt profit-maximizing research recommendations to their individual farms. Careful cash flow planning resulted in farms successfully surviving a very difficult financial period.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

Outcome #11

1. Outcome Measures

Number of Arkansans Increasing Efficiency, Profitability Through Improved Catfish Management

2. Associated Institution Types

•1890 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	8	24

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Increasing feed prices and declining catfish prices in 2007 have created financial difficulties for many catfish farmers.

What has been done

Budgets for U.S. farm-raised catfish production were updated in 2008, distributed to all farmers, posted on the web site, and distributed on CDs. Additional tables have been generated of the effects on production costs of varying feed prices. Instructions on how to interpret breakeven prices above variable costs, total costs, and net returns above cash costs have been distributed widely. Spreadsheets that calculate the effect of allocating feed quantities to meet cash flow needs have also been distributed.

Results

Workshops have been well attended. Over 200 copies of CDs, budget publications, and updated tables have been requested. Farmers are adopting the spreadsheets to their particular farm situation and making decisions for 2008 based on analysis of their cost structures. Careful farm analysis enabled a number of catfish farms to survive a very difficult year in 2008.

4. Associated Knowledge Areas

KA Code	Knowledge Area
602	Business Management, Finance, and Taxation

Outcome #12**1. Outcome Measures**

Number of diets with new ingredients that are commercially available, or number of new feeding strategies implemented by industry

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	1	8

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Feed prices in 2008 reached record highs. Feed mills, pressured to produce cheaper feeds, began to offer previously untested feed formulations.

What has been done

New tank and pond trials were conducted with the newly-developed feed formulations.

Results

The more expensive feed formulation resulted in the best performance of catfish and the best economic outcome.

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Public Policy changes
- Competing Public priorities
- Competing Programmatic Challenges

Brief Explanation

Changing market demand for aquaculture products, new disease or other production barrier, and public acceptance of recommendations. Global economic situation changes, regulatory laws change. Changes in EPA regulations.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- During (during program)

Evaluation Results

Based on ten point scale, evaluation results ranged from 7.5 to 9.1 . Overall, research seems beneficial to catfish production.

Key Items of Evaluation

Sampling and Surveys conducted at the Aquaculture and Fisheries Field Day

Program #6

V(A). Planned Program (Summary)

1. Name of the Planned Program

Alternative Crop Production

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants		25%		25%
205	Plant Management Systems		25%		25%
211	Insects, Mites, and Other Arthropods Affecting Plants		25%		25%
601	Economics of Agricultural Production and Farm Management		25%		25%
Total			100%		100%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.1	0.0	4.2
Actual	0.0	0.1	0.0	2.2

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	6831	0	273908
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	213416
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Conduct research experiments; make presentations in conferences and meetings; conduct workshops and field days; develop Extension publications; and develop research publications.

Evaluated vegetable crop sequences as a combination or combinations of summer crops and fall greens in rotation and continuous cropping systems. Sweet potato yield levels were lower in 2008 than in 2006, but the yield decrease was much less in rotated than in continuous crop sequences. Similarly, squash yields in 2008 were higher under rotated than continuous squash-fall greens sequences. In 2008, higher fall greens yields were obtained if the previous crop was southern peas or squash. Sweet corn and southern pea- fall greens sequences produced lower fall greens yields and no yields for sweet corn and southern pea crops; therefore, this crop sequence would not be profitable to the farmer. Due to the increased demand for fresh peas in South Arkansas, we evaluated southern pea genotypes to identify genotypes with high fresh seed yield potential and harvest index. Fresh seed yield was highly correlated to harvest index. We found that two genotypes (UAPB2 and Early Scarlet) had higher yields and harvest indices comparable to those of the most popular genotype (Top Pick) grown by small farmers. Evaluation of superior southern pea genotypes will continue with more emphasis on finding management practices that increase fresh seed yield such as plant population, planting date, weed control and fertilization. A soil testing very low in potassium was used to evaluate the yield response and components of yield of sweet corn to potassium fertilizer application. Results indicate that application of 80 lbs K2O per acre increased ear weight by 29% compared to the control. In addition, the variation in plants with two ears and ear diameter accounted for by potassium fertilizer was 45% and 50%, respectively. It is important to supply nutrients if the soil supply is low to ensure optimum vegetable yields and quality. Research will continue to determine nutrient needs of other vegetable crops using cheap alternative fertilizers. Eight varieties of Gladiolus flower plant: Plum Tart, Goldfield, Mixed Colors, Arabian Night, Fire-Cracker, Wigs Sensation, Pink Event, and Espresso were evaluated for flower yield in the southeast Arkansas conditions. Results indicate that the variety "Espresso" produces the highest number of flowers under the Southeast Arkansas conditions. The plants require frequent irrigation during the hot summer period. Since the Southeast Arkansas is prone to drought in the summer months, varieties should be selected for drought tolerance, vigorous growth, and early flowering. Such selections would ensure sustainability and profitability of the floriculture agribusiness. Results suggest that planting Gladiolus species for floral production could be a profitable agribusiness in the Southeast Arkansas Delta. The first year trial suggests that the environment is very favorable or conducive for the growth of Gladiolus species. However, there is a need to conduct appropriate selections for vigorous growth and early flowering. Since the Southeast Arkansas is prone to drought in the summer months, there is also the need to select appropriate varieties for drought tolerance. This would help to limit irrigation times and also ensure sustainability. Furthermore, experiment on fully matured (or dried) cow peas and early (or fresh) cow peas against bruchid beetles in laboratory conditions such as lower humidity, and development of enterprise budge(s) are on-going.

2. Brief description of the target audience

Small Farms and Limited Resource Farmers.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	50	75	20	50
2008	25	60	15	25

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Fifty percent of the UAPB LRF's clientele adapt the rotation and insect control practices after five years. In case of ornamental 2-3% of UAPB LRF's will adopt ornamental production after five years.

Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	1)The number of LRFs that adopt vegetable rotations/planting sequences, and insect control practices developed by this research; 2) number of LRFs that enter ornamental horticultural production, and 3) number of contact with clientele at workshop, field days, demonstrations, etc.

Outcome #1

1. Outcome Measures

1)The number of LRFs that adopt vegetable rotations/planting sequences, and insect control practices developed by this research; 2) number of LRFs that enter ornamental horticultural production, and 3) number of contact with clientele at workshop, field days, demonstrations, etc.

Not reporting on this Outcome for this Annual Report

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought,weather extremes,etc.)
- Economy
- Appropriations changes
- Government Regulations

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)

Evaluation Results

Key Items of Evaluation

Program #7

V(A). Planned Program (Summary)

1. Name of the Planned Program

Extension Livestock Management Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
301	Reproductive Performance of Animals		10%		0%
303	Genetic Improvement of Animals		10%		0%
306	Environmental Stress in Animals		15%		0%
307	Animal Management Systems		25%		0%
806	Youth Development		40%		0%
	Total		100%		0%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	1.0	0.0	0.0
Actual	0.0	1.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	110272	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	67500	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Pro gram accomplishments for FY '08 involved work with county Extension staff, Vocational Agriculture Instructors, 4-H and FFA youth, and livestock producers in the areas of youth livestock activities, Cow Herd Performance Test work, and general herd management. Work in these areas was initiated in FY '05 with the Silas H. Hunt Foundation in Southwest Arkansas and has continued into FY '08.

Youth livestock activities involving 4-h and FFA members were quite successful in FY '08. The Southeast District 4-H Horse Show had seventeen 4-H'ers from six counties participate in seventeen different events. The Southeast District FAir had 518 4-H and FFA members from eleven counties exhibit beef cattle, dairy cattle, sheep, swine, dairy goats and meat goats. At the Arkansas State Fair, 1075 junior exhibitors (4-H and FFA) exhibited 1913 head of hogs in the Market Hog Show, the Commercial Gilt Show and in the Breed Shows.

Other 4-H work included judging the Advanced Senior Record Books in Swine and in Veterinary Science. The Specialist is also in charge of the 4-H Veterinary Science Project for Arkansas and judged the Veterinary Science sections at the four regional 4-H O'Ramas.

Close work with several beef herds continues with performance work and general herd management. In FY '08, the Snider and Lewis Angus herd posted an average weaning weight of 563 pounds on their spring born calves and 592 pounds on their fall born calves. The Myers herd maintained 505 pouund average weaning weight with an initial start at 230 pounds.

Work with meat goats was started several years ago. One producer in the Pine Bluff area is currently developing a fairly nice herd of grade Boer goats and is enjoying sales directly off the farm to area residents for meat.

2. Brief description of the target audience

Livestock producers. 4-H and FFA youth.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	150	25	1000	0
2008	268	25	2500	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Output measures will be number of producers working with the program (175 annual contacts), increase in number of animals weaned per breeding age female, and increase in average weaning weight of animals in cooperating herds. Number of youth (1000 annual contacts) participating in various livestock activities.

Year	Target	Actual
2008	1175	0

Output #2

Output Measure

- Output measures will be the number of adult producers contacted (268 direct contacts) by program activities and the number of youth participating in various livestock activities (2500 direct youth contacts).

Year	Target	Actual
2008	{No Data Entered}	2768

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Number of producers involved in the livestock program.

Outcome #1

1. Outcome Measures

Number of producers involved in the livestock program.

Not reporting on this Outcome for this Annual Report

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Public Policy changes
- Government Regulations
- Other (production costs)

Brief Explanation

Over the past two years the cost of production items (feeds, (esp, corn and protein), fertilizers for pasture and hay, chemicals for weed control, fuel, fencing materials etc.) have skyrocketed in price and some are yo-yoing up and down. This has caused many producers to cut back on many production items and put the herd on bare minimum maintenance and quite a few of the smallest beef operators have quit simply because of feed costs.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- During (during program)

Evaluation Results

Evaluation results will come from herd inventory records and performance records. If these records can be secured on a portion of the participating herds, we will extrapolate it to the other herds.

Key Items of Evaluation

Key evaluation items would be the change in percent cows bred and percent calf crop weaned.

Program #8

V(A). Planned Program (Summary)

1. Name of the Planned Program

Small Farm Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants		20%		0%
213	Weeds Affecting Plants		20%		0%
301	Reproductive Performance of Animals		15%		0%
601	Economics of Agricultural Production and Farm Management		30%		0%
602	Business Management, Finance, and Taxation		15%		0%
Total			100%		0%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	4.0	0.0	0.0
Actual	0.0	0.6	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	43078	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	231286	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

The following activities were conducted: educational meetings, alternative enterprise tours, assistance in developing production plans, assistance in developing financial and marketing plans, assistance in using USDA Program, and assistance in using the Cooperative Extension Service (CES) and UAPB Cooperative Extension Program (CEP) crop and livestock production recommendations. Also, newsletters, news articles, fact sheets, and educational videos and DVD were used to educate producers.

2. Brief description of the target audience

The targeted audience for the Small Farm Program include African Americans, Hispanics, Women, and small farms with gross farm sales of less than \$250,000.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	7000	10000	250	300
2008	8000	25000	250	350

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- The following program activities will be conducted to accomplish the objectives: workshops, one-on-one meetings, farm tours, field visits, taking farmers to out of state workshops, news articles, newsletters, and fact sheets. Output will also be measured by the number of telephone calls requesting assistance, office visits, and meetings with USDA and state officials.

Year	Target	Actual
2008	7000	7550

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Outcomes will be measured by number of farmers participating in the Small Farm Program, amount of loan funds received as a result of assistance with applications, number of farmers assisted in signing up for Conservation Programs, amount of conservation funds received by clients, number of farmers assisted in signing up for Price Support (Disaster, NAP, LAP, LDP, DCP) programs, amount of income clients received by using programs, number of farmers assisted in using CES recommendations, economic impact from farmers using CES Programs, number of farmers informed about alternative enterprises, number of farmers developing estate plans, and number of farmers adding alternative enterprises to their operation.

Outcome #1**1. Outcome Measures**

Outcomes will be measured by number of farmers participating in the Small Farm Program, amount of loan funds received as a result of assistance with applications, number of farmers assisted in signing up for Conservation Programs, amount of conservation funds received by clients, number of farmers assisted in signing up for Price Support (Disaster, NAP, LAP, LDP, DCP) programs, amount of income clients received by using programs, number of farmers assisted in using CES recommendations, economic impact from farmers using CES Programs, number of farmers informed about alternative enterprises, number of farmers developing estate plans, and number of farmers adding alternative enterprises to their operation.

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	500	500

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Many socially disadvantaged producers (SDPs) in Arkansas are small row crop (soybeans, wheat) producers and they could increase their income by growing more profitable vegetable crops. Most of these producers do not use extension production recommendations and many experience yields below the county average. These producers also operate large amounts of land that need improvements (irrigation and land leveling) and many have a difficult time in completing USDA loan applications and they are reluctant to apply for USDA loans due to the agencies' past history of discrimination when awarding loans to black farmers.

What has been done

The University used grant funds to place five (5) extra extension associates (EAs) in strategic areas that had high concentration of SDPs. The EAs educated producers about vegetable production and provided them with UAPB fact sheets on the economic and production of vegetables. The university also provided a 13000 square foot demonstration processing facility to help in the marketing the vegetables. EAs also encouraged SDPs to use extension production practices to improve yields, and they encouraged SDPs to use the USDA cost share programs to obtain funds to improve their land. They also assisted SDPs in understanding and completing financial plans, including USDA loan applications.

Results

As a result of growing vegetables instead of soybeans (their traditional crop), 34 producers average a net income of \$425 per acre on 869 acres from their vegetables as compared to a net income of \$75 per acre if they would have grown soybeans. The increase income gained from growing vegetables instead of soybeans was \$369325.

Ten (10) SDPs were assisted in obtaining approximately \$300,000 from the Environmental Quality Incentive Program (EQIP) to improve their land. These funds will be used to level approximately 600 acres of land. Once the land is leveled crop yields will increase between 10-25% and irrigation labor cost will decrease by as much as 50%.

Ninety two producers were assisted in developing financial plans for their operations. Twenty two (22) of these producers were assisted with USDA loan applications and they received approximately \$2.0 million dollars in operating funds. Thirty five (35) of these producers were also assisted in using forward contracts to increase their income by 30%.

Approximately 60 producers took soil tests and 30 applied fertilizer according to recommendations. One producer saved \$80 per acre by soil testing. Twenty five producers used extension recommended varieties which resulted in a 20% increase in yields. Fifty producers used the extension weed control manual were they saved an estimated \$30 per acre on 12000 acres. Also 10 producers implemented an active crop rotation plan and 5 producers stopped farming unproductive fields.

4. Associated Knowledge Areas

KA Code	Knowledge Area
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
601	Economics of Agricultural Production and Farm Management
213	Weeds Affecting Plants
602	Business Management, Finance, and Taxation
301	Reproductive Performance of Animals

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought,weather extremes,etc.)
- Economy
- Appropriations changes
- Public Policy changes

Brief Explanation

Hurricanes affected crops yields of producers in Southeast Arkansas. This included row crops (soybeans, rice, cotton, and milo) and vegetables crop yields. The excessive rains associated with the hurrricans destroyed watermelons, sweetpotatoes, squash and many other acres of vegetables. In additions, yields on cotton , soybeans were greatly reduces due to the excessive rains. Famers in the areaare looking for financial assistance from the disaster program.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- During (during program)
- Case Study

Evaluation Results

The producer in the case study stated that "he could not make it, without the help from this project". "The help with paperwork (records and financial planning) was especially useful, because in attempting to get loans he needed help in restructuring debts and calculating cash flows. He also appreciated the marketing assistance that was provided while being assisted with the financial plan.

The producer also expressed gratitude for the crop production assistance; the emphasis that the project staff put on soil testing, adding lime when needed, and using recommended varieties and chemicals had really help him with his production. As a result of using the small farm program, he currently attends extension meetings and use extension recommendations.

The producer was especially grateful for the help he received in understanding the different USDA programs: including crop insurance, disaster, price support and conservation. The producer reported the overall project as very good.

Key Items of Evaluation

- Crop production assistance
- Financial analysis assistance
- Marketing assistance

Program #9

V(A). Planned Program (Summary)

1. Name of the Planned Program

Herbs, Spices, and Medicinal Crops

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
202	Plant Genetic Resources		35%		35%
502	New and Improved Food Products		20%		20%
701	Nutrient Composition of Food		35%		35%
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins		10%		10%
Total			100%		100%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.1	0.0	2.1
Actual	0.0	0.1	0.0	1.3

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	3945	0	131527
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	71139
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Three field experiments were conducted on promising varieties/lines of specialty herbs and vegetables.
- Some preliminary data on variability in hot pepper breeding lines were presented in a regional meeting.
- Phytochemical screening of hot pepper lines could not be done because samples could not be collected from the field due to flood damage.
- A few new recipes were pre-tested using peas, greens and bitter melons.

2. Brief description of the target audience

Our targeted audience have been leaders of the agricultural, academic and social communities including small scale farmers, home gardeners, and extension agents. Food scientists, nutritionists, and health activists were also addressed.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	25	50	0	0
2008	5	10	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	0	2	2

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- # of research publications; # of promising crop lines identified; # of successful food preparations 2007 1 publication 2008 1 publication + 3 crop lines identified 2009 1 publications + 4 crop lines identified + 2 recipes developed 2010 1 publications + 4 crop lines confirmed + 3 recipes developed 2011 1 publications + 5 crop lines confirmed + 3 successful food preparations confirmed

Year	Target	Actual
2008	4	2

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	# of people have knowledge about the new/improved recipes
2	# of people accept/like the new food preparations
3	# of people adopted the new foods in their daily diets

Outcome #1

1. Outcome Measures

of people have knowledge about the new/improved recipes

Not reporting on this Outcome for this Annual Report

Outcome #2

1. Outcome Measures

of people accept/like the new food preparations

Not reporting on this Outcome for this Annual Report

Outcome #3

1. Outcome Measures

of people adopted the new foods in their daily diets

Not reporting on this Outcome for this Annual Report

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Appropriations changes
- Competing Programmatic Challenges

Brief Explanation

Some of the experiments could not be conducted due to shortage of manpower assistance and occurrence of seasonal environmental disadvantages.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)

Evaluation Results

It was too early to conduct evaluation studies.

Key Items of Evaluation

Program #10

V(A). Planned Program (Summary)

1. Name of the Planned Program

Value Added Products

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
501	New and Improved Food Processing Technologies		25%		25%
502	New and Improved Food Products		25%		25%
503	Quality Maintenance in Storing and Marketing Food Products		25%		25%
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins		25%		25%
Total			100%		100%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	1.1	0.0	0.5
Actual	0.0	0.3	0.0	0.7

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	80032	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	62435
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

One cultivar of sweet potato (Beauregard) was obtained from the experimental field. The effect of natural antibrowning agents including sodium chloride, N-acetyl-L-cysteine, 4-hexylresorcinol, reduced glutathione, and ascorbic acid were measured by a colorimeter. The surface color of sliced sweet potato treated with antibrowning agents was determined along with the ones not treated with antibrowning agents. Due to lack of sweet potato samples, replicated experiments will be performed later. Compared with color of non-treated samples, color of treated samples at room temperature were not different during storage at room temperature and refrigeration temperature. Further studies with more varieties will be performed to determine effect of natural antibrowning agents. Ten varieties of blackberry were harvested and kept in the freezer for value-added product development. Due to small quantity of blackberry per variety, varieties will be blended to make jam or jelly product. Quality of final product will be analyzed during storage.

2. Brief description of the target audience

Local farmers and limited resource farmers

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	10	30	0	0
2008	5	20	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Three abstracts and three presentations at the scientific annual meetings. Three peer reviewed publications. Three presentations and/or workshops to farmers.
- Not reporting on this Output for this Annual Report*

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Increase number of small farmers and producers who adopt UAPB's Fresh-Cut Processing Technology and utilize it for their fresh-cut process.

Outcome #1

1. Outcome Measures

Increase number of small farmers and producers who adopt UAPB's
Fresh-Cut Processing Technology and utilize it for their fresh-cut process.
Not reporting on this Outcome for this Annual Report

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought,weather extremes,etc.)

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Comparisons between program participants (individuals,group,organizations) and non-participants

Evaluation Results

Key Items of Evaluation

Program #11

V(A). Planned Program (Summary)

1. Name of the Planned Program

Reduce Losses Due to Catfish Diseases

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
311	Animal Diseases		100%		100%
	Total		100%		100%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.9	0.0	0.1
Actual	0.0	1.1	0.0	0.1

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	79459	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	63256	0	9132
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Advised on management of disease diagnostic services. One on one contact with farmers on mangement options.

2. Brief description of the target audience

Commercial catfish producers

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	500	1000	0	0
2008	500	1000	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of refereed journal articles

Year	Target	Actual
2008	1	1

Output #2

Output Measure

- Number of presentations

Year	Target	Actual
2008	2	2

Output #3

Output Measure

- Number of trade magazine articles

Year	Target	Actual
2008	1	1

Output #4

Output Measure

- Number of abstracts published

Year	Target	Actual
2008	2	2

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Number of farmers helped with catfish disease cases
2	Number of catfish ponds sampled for trematodes
3	Number of educational meetings conducted to assist farmers with trematode detection and control

Outcome #1**1. Outcome Measures**

Number of farmers helped with catfish disease cases

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	500	450

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Disease losses are a major expense in catfish production. Reduction of losses and treatment-related expenses will increase the competitiveness of the US catfish industry

What has been done

Provision of disease diagnostic services for fish farmers
 Survey of the AR catfish industry for the catfish trematode and provision of advice to affected farms.
 Biosecurity education through publication and presentations at meetings
 Research into the control of parasite vectors

Results

Almost the entire AR catfish industry was surveyed for trematodes.
 Affected farms following Extension recommendations for trematode prevention are saving over \$500,000/yr
 Eight extension publications and presentations have alerted the industry to exotic disease risks and led to the development of a catfish industry VHS contingency plan

4. Associated Knowledge Areas

KA Code	Knowledge Area
311	Animal Diseases

Outcome #2**1. Outcome Measures**

Number of catfish ponds sampled for trematodes

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	25	50

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Approximately 2,500 samples were submitted to the laboratory. Treatment advice was given to approximately 200 produce/managers

What has been done

Sixty two farms involving 400 ponds were surveyed for presence of the catfish trematode. This represents 4,000 of Arkansas' 30,000 acres of catfish included in the survey

Results

Trematode survey results showed 75% of producers with farms positive for catfish trematode have stocked black carp as a management tool. The remaining 25% of producers will stock black carp when sufficient numbers of black carp become available.

4. Associated Knowledge Areas

KA Code	Knowledge Area
311	Animal Diseases

Outcome #3

1. Outcome Measures

Number of educational meetings conducted to assist farmers with trematode detection and control

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Approximately 2,500 samples were submitted to the laboratory. Treatment advice was given to approximately 200 producer/managers.

What has been done

Sixty two farms involving 400 ponds were surveyed for presence of the catfish trematode. This represents 4,000 of Arkansas' 30,000 acres of catfish included in the survey.

Results

Trematode survey results showed 75% of producers with farms positive for catfish trematode have stocked black carp as a management tool. The remaining 25% of producers will stock black carp when sufficient numbers of black carp become available.

4. Associated Knowledge Areas

KA Code	Knowledge Area
311	Animal Diseases

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Other (Regulations promulgated by APHIS)

Brief Explanation

V(l). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)

Evaluation Results

Key Items of Evaluation

Program #12

V(A). Planned Program (Summary)

1. Name of the Planned Program

Agricultural Policy

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
610	Domestic Policy Analysis		100%		100%
	Total		100%		100%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.1	0.0	1.4
Actual	0.0	0.1	0.0	0.4

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	2475	0	102299
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	71139
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

A survey of sixty (60) farmers that participate in the University of AR-Pine Bluff, Small Farm Project is currently being conducted. Approximately one-hundred and eighty (180) more farmers will be surveyed. Economic modeling and analysis of data collected will be done. Information will be disseminated to farmers via workshops, publications, pamphlets, newsletters and a farmer meeting.

2. Brief description of the target audience

Two-hundred and fifty to three-hundred (250-300) farmers that participate in the University of AR-Pine Bluff, Small Farm Project.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	60	0	0	0
2008	60	0	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	1	1	
2008	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- 1. Number of published journal articles. 2. Number of presentations at professional conferences. 3. Number of presentations at stakeholder and interest group forums. 4. Number of presentations at other forums.

Year	Target	Actual
2008	60	60

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	1. Number of changes in policy or policy applications recommended. 2. Increased participation of minority and limited resource farmers in agricultural programs. 3. Changes in production and consumption behavior of minority and limited resource farmers in response to greater awareness of agricultural policy. 4. Increased access to credit and other programs by minority and limited resource farmers. 5. Increased level of policy-makers interest/attention to research findings. 6. Changes in service provision to limited resource and minority farmers by state and federal agricultural agents.

Outcome #1**1. Outcome Measures**

1. Number of changes in policy or policy applications recommended. 2. Increased participation of minority and limited resource farmers in agricultural programs. 3. Changes in production and consumption behavior of minority and limited resource farmers in response to greater awareness of agricultural policy. 4. Increased access to credit and other programs by minority and limited resource farmers. 5. Increased level of policy-makers interest/attention to research findings. 6. Changes in service provision to limited resource and minority farmers by state and federal agricultural agents.

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	60	60

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Small and Limited-Resource Farmers that participate in the Small Farm Project and individuals, organizations and agencies that provide assistance to farmers. The overall objective is to make policy recommendations that will benefit small and limited-resource farmers.

What has been done

A survey is currently being conducted of sixty (60) farmers involved in the Small Farm Project, University of Arkansas at Pine Bluff (UAPB). Approximately one-hundred and eighty (180) more farmers will be surveyed.

Results

Based on the results of the Survey and analysis, policy recommendations will be made that will better benefit small, limited-resource farmers. Results will be disseminated to the communities of interest via the Small Farm Project Newsletter, Farmer Workshops and the Arkansas Environmental, Agricultural and Consumer Sciences Journal.

Outcome measures including 1) changes in policy or policy application recommendations. 2) Increased participation of minority and limited resource farmers in agricultural programs. 3) Changes in production behavior of minority and limited resource farmers in response to greater awareness of agricultural policy. 4) Increased access to credit and other programs by minority and limited resource farmers. 5) Increased level of policy-makers interest/attention to research findings.

4. Associated Knowledge Areas

KA Code	Knowledge Area
610	Domestic Policy Analysis

V(H). Planned Program (External Factors)**External factors which affected outcomes**

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations

Brief Explanation

Any changes that would reduce financial resources needed to contact farmers. This would also include changes that would discourage farmers from participating in surveys, workshops, and etc. Essentially, a reduction in the financial budget needed to conduct the project would compromise the research.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- During (during program)

Evaluation Results

A Survey (pre-test) of Small Farm Project Extension Associates and small, limited-resource farmers indicated that some survey questions were inappropriate. This input was useful in developing more appropriate survey questions.

Key Items of Evaluation

Increase in small, limited-resources farmers awareness of agricultural programs and agricultural policies.

Program #13

V(A). Planned Program (Summary)

1. Name of the Planned Program

Aquaculture Equipment and Information Development Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
402	Engineering Systems and Equipment		50%		50%
404	Instrumentation and Control Systems		50%		50%
Total			100%		100%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	1.3	0.0	0.3
Actual	0.0	0.7	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	89336	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	51894	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Tested and refined fish harvesting, grading, and sampling equipments and technologies. Developed recommendations for the appropriate and optimal use of the new equipments and technologies. Monitored commercial production facilities who adopted the new equipment and technology.

2. Brief description of the target audience

- Fish farmers throughout the southern region, primarily Arkansas Catfish producers
- Arkansas Game and Fish personel
- Research scientists
- County Extension agents Catfish farmers

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	10	50	0	0
2008	460	250	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of Abstract Publications

Year	Target	Actual
2008	1	5

Output #2

Output Measure

- Number of Conference Presentations

Year	Target	Actual
2008	1	7

Output #3

Output Measure

- Number of Refereed Journal Publications

Year	Target	Actual
2008	1	2

Output #4

Output Measure

- Number of publications

Year	Target	Actual
2008	2	0

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O No.	OUTCOME NAME
1	Number of Commercial Arkansas Catfish Farmers Learning About New Technologies
2	Number of Commercial Arkansas Catfish Farmers Adopting New Technologies
3	Number of Commercial Arkansas Catfish Farmers Increasing Efficiency and Profitability
4	Number of Commercial Arkansas Catfish Farmers That Learned New Methods to Access Fish Inventories
5	Number of Commercial Arkansas Fish Farmers Learning New Handheld Computer Technologies for Record Keeping
6	Number of Commercial Arkansas Catfish Farmers Accurately Assessing Their Fish Inventories
7	Number of Commercial Catfish Farmers That Utilized Hand Held Computer Technologies for Record Keeping
8	Number of Arkansas Fish Farmers who have Increased Their Management Efficiency or That Conducted Comprehensive Annual Financial and Economic Analysis Because of Better Fish Inventory Assessment Methods or the Use of Improved Computerized Record Keeping Systems
9	Percentage of Catfish Farmers that are Informed About the Effectiveness and the Optimal Sample Size of the Trawl Sampling Method Through Extension Specialists
10	Percentage of Catfish Farmers that Effectively Adopt and Use the Optimal Sample Size of Trawl sampling for Inventory Estimation
11	Percentage of Satisfaction Rate of Farmers who Adopted the Trawl Sampling with Recommended Sample Size for Inventory Estimation
12	Number of Arkansans gaining access to needed information

Outcome #1

1. Outcome Measures

Number of Commercial Arkansas Catfish Farmers Learning About New Technologies

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	50	50

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Catfish farmers - because they need to improve their efficiency

What has been done

On farm demonstrations and tests of fish harvesting, grading, and sampling equipments and technologies were conducted. Results from on-farm demonstrations were presented at educational meeting and published on handouts.

Results

The new equipment appear useful to improve efficiency on fish farms

4. Associated Knowledge Areas

KA Code	Knowledge Area
402	Engineering Systems and Equipment

Outcome #2

1. Outcome Measures

Number of Commercial Arkansas Catfish Farmers Adopting New Technologies

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Catfish farmers - because they need to improve their efficiency

What has been done

On farm demonstrations and tests of fish harvesting, grading, and sampling equipments and technologies were conducted. Results from on-farm demonstrations were presented at educational meeting and published on handouts

Results

Some farmers ordered new pieces of equipment to improve their efficiency

4. Associated Knowledge Areas

KA Code	Knowledge Area
402	Engineering Systems and Equipment

Outcome #3

1. Outcome Measures

Number of Commercial Arkansas Catfish Farmers Increasing Efficiency and Profitability

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Catfish farmers - because they need to improve their efficiency

What has been done

On farm demonstrations and tests of fish harvesting, grading, and sampling equipments and technologies were conducted. Results from on-farm demonstrations were presented at educational meeting and published on handouts.

Results

Some farmers ordered new pieces of equipment to improve their efficiency

4. Associated Knowledge Areas

KA Code	Knowledge Area
402	Engineering Systems and Equipment

Outcome #4

1. Outcome Measures

Number of Commercial Arkansas Catfish Farmers That Learned New Methods to Access Fish Inventories

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	50	2

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Catfish farmers - because they need to improve their efficiency

What has been done

On farm demonstrations and tests of fish harvesting, grading, and sampling equipments and technologies were conducted. Results from on-farm demonstrations were presented at educational meeting and published on handouts.

Results

The equipment needs further testing before being used commercially on farms

4. Associated Knowledge Areas

KA Code	Knowledge Area
402	Engineering Systems and Equipment

Outcome #5**1. Outcome Measures**

Number of Commercial Arkansas Fish Farmers Learning New Handheld Computer Technologies for Record Keeping

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	50	32

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Catfish farmers - because they need to improve their efficiency

What has been done

On farm demonstrations and tests of fish harvesting, grading, and sampling equipments and technologies were conducted. Results from on-farm demonstrations were presented at educational meeting and published on handouts.

Results

Technology works well, but used essentially only by researchers

4. Associated Knowledge Areas

KA Code	Knowledge Area
404	Instrumentation and Control Systems

Outcome #6

1. Outcome Measures

Number of Commercial Arkansas Catfish Farmers Accurately Assessing Their Fish Inventories

2. Associated Institution Types

•1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	8

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Catfish farmers - because they need to improve their efficiency

What has been done

On farm demonstrations and tests of fish harvesting, grading, and sampling equipments and technologies were conducted. Results from on-farm demonstrations were presented at educational meeting and published on handouts.

Results

Only cooperating producers have tested the new trawling technology to date

4. Associated Knowledge Areas

KA Code	Knowledge Area
402	Engineering Systems and Equipment

Outcome #7

1. Outcome Measures

Number of Commerical Catfish Farmers That Utilized Hand Held Computer Technologies for Record Keeping

2. Associated Institution Types

•1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	3	3

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Catfish farmers - because they need to improve their efficiency

What has been done

On farm demonstrations and tests of fish harvesting, grading, and sampling equipments and technologies were conducted. Results from on-farm demonstrations were presented at educational meeting and published on handouts.

Results

A number of producers are now using handheld computers for record keeping and more requested the technology

4. Associated Knowledge Areas

KA Code	Knowledge Area
404	Instrumentation and Control Systems

Outcome #8

1. Outcome Measures

Number of Arkansas Fish Farmers who have Increased Their Management Efficiency or That Conducted Comprehensive Annual Financial and Economic Analysis Because of Better Fish Inventory Assessment Methods or the Use of Improved Computerized Record Keeping Systems

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	5	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Catfish farmers - because they need to improve their efficiency and profitability

What has been done

Workshops and educational meetings were conducted to inform producers on the use of computer technologies for financial management of fish farms

Results

A number of farmers used the technology and modified their management decisions to improve their profitability according to the results of the computer analysis

4. Associated Knowledge Areas

KA Code	Knowledge Area
402	Engineering Systems and Equipment

Outcome #9

1. Outcome Measures

Percentage of Catfish Farmers that are Informed About the Effectiveness and the Optimal Sample Size of the Trawl Sampling Method Through Extension Specialists

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	30	10

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Catfish farmers - because they need to improve their efficiency

What has been done

On farm demonstrations and tests of fish havesting, grading, and sampling equipments and technologies were conducted. Results from on-farm demonstrations were presented at educational meeting and published on handouts.

Results

A large percentage of farmers are aware of the technology currently being tested

4. Associated Knowledge Areas

KA Code	Knowledge Area
402	Engineering Systems and Equipment

Outcome #10

1. Outcome Measures

Percentage of Catfish Farmers that Effectively Adopt and Use the Optimal Sample Size of Trawl sampling for Inventory Estimation

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	5	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Catfish farmers - because they need to improve their efficiency

What has been done

On farm demonstrations and tests of fish havesting, grading, and sampling equipments and technologies were conducted. Results from on-farm demonstrations were presented at educational meeting and published on handouts.

Results

The technology is not yet optimized for commercial application. Only researchers and cooperating producers use the technology at this time.

4. Associated Knowledge Areas

KA Code	Knowledge Area
402	Engineering Systems and Equipment

Outcome #11**1. Outcome Measures**

Percentage of Satisfaction Rate of Farmers who Adopted the Trawl Sampling with Recommended Sample Size for Inventory Estimation

2. Associated Institution Types

•1890 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	50	1

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Catfish farmers - because they need to improve their efficiency

What has been done

On farm demonstrations and tests of fish harvesting, grading, and sampling equipments and technologies were conducted. Results from on-farm demonstrations were presented at educational meeting and published on handouts.

Results

The technology is not yet optimized for commercial application. Only researchers and cooperating producers use the technology at this time.

4. Associated Knowledge Areas

KA Code	Knowledge Area
402	Engineering Systems and Equipment

Outcome #12**1. Outcome Measures**

Number of Arkansans gaining access to needed information

2. Associated Institution Types

•1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	300	300

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)****What has been done**

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
402	Engineering Systems and Equipment

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought,weather extremes,etc.)

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)

Evaluation Results

Grading technology were favorably adopted by industry. Inventory assessment technology needs further testing.

Key Items of Evaluation

Personal discussion with farmers

Program #14

V(A). Planned Program (Summary)

1. Name of the Planned Program

Improving Hatchery Production Efficiency

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
301	Reproductive Performance of Animals		80%		80%
307	Animal Management Systems		20%		20%
	Total		100%		100%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.4	0.0	0.2
Actual	0.0	0.3	0.0	0.5

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	0	62285
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	45099	0	205485
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

We wanted to see if survival and growth of sunshine bass larvae would be improved by including rotifers (*Brachionus plicatilis*), microcyst *Artemia* nauplii, and standard *Artemia* nauplii in sequence during a production run. This experiment was comprised of three treatments with three replicates per treatment. Sunshine bass larvae, 4 dph (4.0 ± 0.1 mm SL), were stocked into 100-L recirculating tanks at a rate of 75 larvae/L. The first feeding treatment was rotifers (40/mL) followed by standard *Artemia* nauplii (8/mL). The second feeding treatment was microcyst *Artemia* nauplii (20/mL) followed by standard *Artemia* nauplii (8/mL). The third feeding treatment was rotifers (40/mL) followed by microcyst *Artemia* nauplii (4/mL) followed by standard *Artemia* nauplii (8/mL). By day 8, all of the feeding treatments were fed standard *Artemia* nauplii only. Average (SD) individual standard length of larvae was 9.08 (1.43) mm and ranged from 6.46 to 15.05 mm. Average length of larvae did not vary among treatments. Variability in survival among tanks was high. Survival ranged from 9% and 12% occurred in treatment two and the highest two survival rates (70% and 96%) occurred in treatment three. It appears that matching food size to larval size, as larvae grow, is likely to result in better survival. However, growth of larvae does not appear to improve similarly.

2. Brief description of the target audience

- Catfish farmers throughout Arkansas
- County Extension agents Hybrid striped bass fingerling producers Hybrid striped bass grow-out facility operators

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	8	50	0	0
2008	8	50	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year Target

Plan: 0

2008 : 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of Abstracts

Year	Target	Actual
2008	2	2

Output #2

Output Measure

- Number of Presentations

Year	Target	Actual
2008	2	2

Output #3

Output Measure

- Number of Refereed Journal Articles

Year	Target	Actual
2008	1	0

Output #4

Output Measure

- Number of Popular Articles and Newsletter Articles

Year	Target	Actual
2008	0	0

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O No.	OUTCOME NAME
1	Number of Fingerling Producers That Learned What We Know
2	Number of Scientists That Learned What We Know
3	Number of Fingerling Producers That Use What We Know
4	Number of Grow-out Operations That Use What We Know
5	Percent of Increase in Hybrid Striped Bass Fingerlings Produced in Arkansas
6	Percent Increase in Hybrid Striped Bass Fingerlings Produced in Tanks
7	Number of Arkansans Gaining Access to Hybrid Catfish Information
8	Number of Arkansans Adopting Hybrid Catfish Production
9	Number of Arkansans Increasing Efficiency, Profitability Through Hybrid Catfish Production

Outcome #1**1. Outcome Measures**

Number of Fingerling Producers That Learned What We Know

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	2

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Fingerling producers in the state of Arkansas are interested in producing hybrid catfish. This practice requires a novel approach to spawning catfish and the integration of experimental data into practical approaches for the farmer.

What has been done

On-going collaborations with Baxter Land Company in 2008 tested two forms of spawning aides Catfish pituitary and Carp pituitary to induce artificial spawning to produce hybrid catfish. Examinations of advancing the spawning season were continued on the campus of UAPB. Graduate student, Mini Jose, has completed experiments evaluating protocols for pre-spawning conditioning with different water temperature regimes and is anticipating completing her thesis over the next 10 months. UAPB researchers act as a conduit for reporting of data describing the use of spawning aids to the INAD permit holder, the USFWS.

Results

Trials revealed that Catfish pituitary performed as well or better than carp pituitary. This data has been implemented into the decisions for artificial spawning of channel catfish in 2009. The availability of catfish pituitary to Arkansas farmers increases the options for producers of hybrid fingerlings and potentially can act as a source of a value added product from catfish processing operations. Final reports for INAD use of LHRH and carp pituitary use were submitted to the USFWS.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals

Outcome #2**1. Outcome Measures**

Number of Scientists That Learned What We Know

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	30	10

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Examinations of artificial spawning practices

What has been done

Ongoing and planned collaborations with USDA laboratories in Stoneville, Mississippi are being developed.

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

Outcome #3

1. Outcome Measures

Number of Fingerling Producers That Use What We Know

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	5	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Artificial spawning of channel catfish

What has been done

Baxte Land Company currently is the only Arkansas fingerling producer investing capital and energy in the development of artificial spawning practices for the production of hybrid catfish.

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals

Outcome #4

1. Outcome Measures

Number of Grow-out Operations That Use What We Know

Not reporting on this Outcome for this Annual Report

Outcome #5

1. Outcome Measures

Percent of Increase in Hybrid Striped Bass Fingerlings Produced in Arkansas

Not reporting on this Outcome for this Annual Report

Outcome #6

1. Outcome Measures

Percent Increase in Hybrid Striped Bass Fingerlings Produced in Tanks

Not reporting on this Outcome for this Annual Report

Outcome #7

1. Outcome Measures

Number of Arkansans Gaining Access to Hybrid Catfish Information

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	60	10

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Artificial spawning of channel catfish

What has been done

UAPB personnel and personnel at Baxter Land Company continue to develop approaches to the production of hybrid fry. UAPB researchers have supplied information to additional Arkansas fingerlings producers on infrastructure requirements and outlined INAD reporting requirements for the use of chemicals not yet registered by the USFDA that are currently used under the INAD permit maintained by the USFWS.

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

Outcome #8

1. Outcome Measures

Number of Arkansans Adopting Hybrid Catfish Production

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	12	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Artificial spawning of channel catfish

What has been done

One fingerling producer, the Baxter Land Company, in Arkansas has invested significant capital and energy into the production of hybrid catfish. Numerous farmers express an interest in rearing hybrid catfish and current supply does not meet the regional demand.

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

Outcome #9

1. Outcome Measures

Number of Arkansans Increasing Efficiency, Profitability Through Hybrid Catfish Production

Not reporting on this Outcome for this Annual Report

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Appropriations changes
- Government Regulations

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)

Evaluation Results

State Hatchery and Research personnel are using recommendations with good success.

Key Items of Evaluation

Spoke with personnel via email.

Program #15

V(A). Planned Program (Summary)

1. Name of the Planned Program

Breeding and Biotechnology

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
201	Plant Genome, Genetics, and Genetic Mechanisms		20%		20%
202	Plant Genetic Resources		30%		30%
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants		30%		30%
211	Insects, Mites, and Other Arthropods Affecting Plants		20%		20%
	Total		100%		100%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.1	0.0	1.5
Actual	0.0	0.1	0.0	1.5

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	2389	0	181943
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	142278
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Conducted research experiments on cowpea biotechnology and breeding for high yielding and disease and insect resistant lines for production and marketing
- Published peer-reviewed research article on cowpea regeneration

2. Brief description of the target audience

Small-farm, limited resource farmers

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	50	75	25	50
2008	50	75	25	50

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	1	
2008	0	1	1

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Production of improved cowpea cultivars that resist biotic and abiotic stresses. Publications in reviewed journals.

Year	Target	Actual
2008	1	1

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Short-term outcome measures are: 1. Establishment of plant regeneration system in cowpea, 2. Development of transgenic protocol, 3. Identification of cultivars for breeding cowpeas with improved yield. Long-term outcome measures are the production of disease and insect-resistant, high yielding cowpeas.

Outcome #1**1. Outcome Measures**

Short-term outcome measures are: 1. Establishment of plant regeneration system in cowpea, 2. Development of transgenic protocol, 3. Identification of cultivars for breeding cowpeas with improved yield. Long-term outcome measures are the production of disease and insect-resistant, high yielding cowpeas.

2. Associated Institution Types

•1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	1	1

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Cowpea is an important leguminous, nutrient-rich, alternate crop grown by limited resource farmers. Despite its importance, cowpea yields are greatly reduced by a complex of biotic and abiotic factors like insects. Without insect control, yields range between 100 and 250 kg ha⁻¹ compared to a nearly 10-fold increase when insect control is applied. Current cultivars do not offer protection against insects, therefore, there is a need to enhance biotic and abiotic resistance in cowpea through conventional and biotechnological approaches.

What has been done

Evaluating exotic and local southern pea cultivars for insect and disease resistance and tolerance has been done for the year 2008. Efforts are also on to select fresh-market southern pea varieties suitable for mechanical harvesting, as well as determining optimum staggered-planting intervals feasible to increase harvest window of fresh pea varieties. To express insect resistant genes, an efficient regeneration system was also established in cowpea.

Results

Field experiments on selected exotic and local germplasm were conducted at Pine Bluff and Lonoke stations during the 2008 cropping season. Although both insect damage and disease incidence were monitored, none was observed. For mechanical harvesting, four among several cowpea varieties tested were selected on qualitative traits such as synchrony of pod maturity, pod placement above plant canopy, and fresh-pod color. For establishing optimum staggered-planting intervals, a minimum maturity interval of five days between planting intervals was considered sufficient. Results from tissue culture indicated that the efficiency of regeneration in cowpea cultivars ranged from 76-87%, demonstrating a significant improvement over the published protocols (1-32%).

4. Associated Knowledge Areas

KA Code	Knowledge Area
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
201	Plant Genome, Genetics, and Genetic Mechanisms
211	Insects, Mites, and Other Arthropods Affecting Plants
202	Plant Genetic Resources

V(H). Planned Program (External Factors)**External factors which affected outcomes**

- Natural Disasters (drought, weather extremes, etc.)
- Appropriations changes
- Government Regulations

Brief Explanation

V(l). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- During (during program)

Evaluation Results

Key Items of Evaluation

Program #16

V(A). Planned Program (Summary)

1. Name of the Planned Program

Improving Disease Status for Baitfish Production and Marketing

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
311	Animal Diseases		50%		50%
312	External Parasites and Pests of Animals		25%		25%
313	Internal Parasites in Animals		25%		25%
	Total		100%		100%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	1.2	0.0	0.3
Actual	0.0	1.2	0.0	0.3

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	95765	0	89879
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	97214	0	102874
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Conducted inspections for fish farms to help prevent fish loss.

2. Brief description of the target audience

Commercial baitfish producers.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	40	60	0	0
2008	40	60	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of publications

Year	Target	Actual
2008	7	7

Output #2

Output Measure

- Number of presentations

Year	Target	Actual
2008	5	5

Output #3

Output Measure

- Number of experiments and field trials of treatments for fish parasite and parasite vectors conducted on farms

Year	Target	Actual
2008	2	2

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Percent of Arkansas bait and ornamental fish production farms participating in the State certification program
2	Number of farms that have attempted eradication procedures

Outcome #1

1. Outcome Measures

Percent of Arkansas bait and ornamental fish production farms participating in the State certification program

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	50	50

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Diseases of bait and ornamental fish decrease farm profits and may restrict access to markets

What has been done

Biosecurity education for farms
 Bait and ornamental fish disease diagnosis
 Farm certification
 Regulator education
 Pathogen detection research
 Epidemiological research

Results

Seven publications of biosecurity including a SRAC fact sheet
 Nine presentations on biosecurity at producer meetings
 More than 1200 fish disease cases
 Health inspections on more than 20,000 fish
 Direct assistance in the establishment of the AR Bait and Ornamental Fish Certification Program
 Three workshops and 4 additional presentations for fish health regulator education
 Development of detection methods for 3 fish pathogens
 Research showing that the GSV virus is widespread and not an important pathogen has prevented the loss of a market worth more than \$1,000,000 per year to Arkansas farmers.
 Discovery of the importance and prevention of goldfish herpesvirus disease have prevented the loss of more than \$100,000 worth of fish through a single distributor (practices that will be more widely adopted next year).

4. Associated Knowledge Areas

KA Code	Knowledge Area
311	Animal Diseases

Outcome #2

1. Outcome Measures

Number of farms that have attempted eradication procedures

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	0	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Diseases of bait and ornamental fish decrease farm profits and may restrict access to markets.

What has been done

- Biosecurity education for farms
- Bait and ornamental fish disease diagnosis
- Farm certification
- Regulator education
- Pathogen detection research
- Epidemiological research

Results

- Seven publications of biosecurity including a SRAC fact sheet
- Nine presentations on biosecurity at producer meetings
- More than 1200 fish disease cases
- Health inspections on more than 20,000 fish
- Direct assistance in the establishment of the AR Bait and Ornamental Fish Certification Program
- Three workshops and 4 additional presentations for fish health regulator education
- Development of detection methods for 3 fish pathogens
- Research showing that the GSV virus is widespread and not an important pathogen has prevented the loss of a market worth more than \$1,000,000 per year to Arkansas farmers
- Discovery of the importance and prevention of goldfish herpesvirus disease have prevented the loss of more than \$100,000 worth of fish through a single distributor (practices that will be more widely adopted next year.)

4. Associated Knowledge Areas

KA Code	Knowledge Area
311	Animal Diseases

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Appropriations changes
- Government Regulations

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)

Evaluation Results

Eradication procedures in process. Results will be reported for 2009.

Key Items of Evaluation

Program #17

V(A). Planned Program (Summary)

1. Name of the Planned Program

Controlling Predators of Larval Fish

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
312	External Parasites and Pests of Animals		100%		100%
	Total		100%		100%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.3	0.0	0.1
Actual	0.0	0.3	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	76906	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	53277	0	4064
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Conducted six research trials to establish new chemicals
 Determined the toxicity of pesticides to fish and targeted organisms
 Demonstrated proper use of new chemicals to farmers

2. Brief description of the target audience

Commercial baitfish producers.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	40	100	0	0
2008	40	100	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of Publications

Year	Target	Actual
2008	2	2

Output #2

Output Measure

- Number of Presentations.

Year	Target	Actual
2008	3	3

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Number of major farms adopting treatments
2	Number of farms reporting improved control

Outcome #1**1. Outcome Measures**

Number of major farms adopting treatments

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	10

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Invertebrate predators that eat small fish cause significant losses for the bait and ornamental fish industry

What has been done

Identification of copepos species present in the region. Tests of chemical control methods for copepods. Evaluation of predator control methods on farms.

Results

The prevalence of copepods was determined in aquaculture ponds. The most common copepods that can negatively effect larval fish were calanoids adn cladcerans. These copepods were identified as two species of calanoid. Arctodiaptomus dorsalis (Marsh) which is the dominant species found, Leptodiaptomus siciloides (Lillijeborg) and one species of cyclopoid, Acanthocyclops trajani (mirabdullayev & Defaye).

4. Associated Knowledge Areas

KA Code	Knowledge Area
312	External Parasites and Pests of Animals

Outcome #2**1. Outcome Measures**

Number of farms reporting improved control

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	0	0

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Invertebrate predators that eat small fish cause significant losses for the bait and ornamental fish industry.

What has been done

Identification of copepod species present in the region. Tests of chemical control methods for copepods. Evaluation of predator control methods on farms.

Results

The prevalence of copepods was determined in aquaculture ponds. The most common copepods that can negatively effect larval fish were calanoids and cladacerans. These copepods were identified as two species of calanoid, Arctodiaptomus dorsalis (Marsh), which is the dominatn species found, Leptodiaptomus siciloides (Lilljeborg) and one species of cyclopoid, Acanthocyclops trajani (Mirabdullayev & Defaye).

4. Associated Knowledge Areas

KA Code	Knowledge Area
312	External Parasites and Pests of Animals

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought,weather extremes,etc.)
- Appropriations changes
- Government Regulations

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)

Evaluation Results

Based on 10 point scale, evaluation results were 7.4 indicating beneficial research.

Key Items of Evaluation

Demonstration conducted at the Aquaculture and Fisheries Field Day

Program #18

V(A). Planned Program (Summary)

1. Name of the Planned Program

Improving Management Techniques for Baitfish

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
302	Nutrient Utilization in Animals		45%		45%
307	Animal Management Systems		45%		45%
308	Improved Animal Products (Before Harvest)		10%		10%
	Total		100%		100%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.5	0.0	0.5
Actual	0.0	0.5	0.0	0.5

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	73848	0	195321
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	61340	0	144348
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

A series of studies are being conducted on the components of an egg collection, removal and incubation system, and on new feed ingredients and strategies for feeding baitfish.

2. Brief description of the target audience

Commercial baitfish producers

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	40	80	0	0
2008	90	130	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	0	4	4

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of Peer Reviewed Journal Articles

Year	Target	Actual
2008	0	4

Output #2

Output Measure

- Number of Abstracts

Year	Target	Actual
2008	2	7

Output #3

Output Measure

- Number of Articles in Producer Trade Magazines

Year	Target	Actual
2008	1	1

Output #4

Output Measure

- Number of Fact Sheets and Newsletters

Year	Target	Actual
2008	0	0

Output #5

Output Measure

- Number of Presentations

Year	Target	Actual
2008	1	7

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Number of producers who learn project results
2	Number of producers willing to test successful ingredients or feeding strategies on a commercial scale
3	Percent of baitfish producers (by acreage) adopting diets with new ingredients that are commercially available, or number of new feeding strategies implemented by industry

Outcome #1**1. Outcome Measures**

Number of producers who learn project results

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	1	30

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Diets for other baitfish (golden shiners, goldfish) may be improved through the addition of feed additives (e.g., prebiotics) that improve survival.

What has been done

Goldfish trials in aquaria and pools with a dairy/yeast prebiotic were completed.

Results

The prebiotic improved survival of stressed fish challenged with bacteria that cause columnaris.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

Outcome #2**1. Outcome Measures**

Number of producers willing to test successful ingredients or feeding strategies on a commercial scale

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	0	0

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Fish producers are interested in reducing fish mortality through the use of prebiotics and probiotics

What has been done

Research studies have shown that preiotics may reduce stress-related fish mortality.

Results

Producers have talked with a local feed mill and with a commercial producer of prebiotics about adding the prebiotic to baitfish diets. Cost may limit implementation, as small-scale implementation is not attractive to the producer of the prebiotic, and they may charge more for the product than if feed producers could buy the prebiotic in larger amounts.

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals

Outcome #3**1. Outcome Measures**

Percent of baitfish producers (by acreage) adopting diets with new ingredients that are commercially available, or number of new feeding strategies implemented by industry

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	25	25

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Commercial production of baitfish is relatively inefficient. Feed comprises a major part of production costs. Producers are interested in novel diet ingredients and feeding strategies that can improve the profitability of their industries. Baitfish are marketed as live products, so hardiness and resilience must be considered in designing diets and feeding strategies for them.

What has been done

Research has been conducted and known variables in diets for the study include:

1. Feed additive (Grobiotic)
2. Lipid level (low (4-6%) versus high (greater than or equal to 9%))
3. Plant versus animal protein sources

Results

Grobiotic stimulated the specific immune responses in golden shiners in indoor and outdoor systems, but few other performance criteria were affected. High-fat diets enhanced body fat and survival in outdoor systems. Fish meal did not produce any benefits relative to other protein sources. In goldfish, results were similar, except that the prebiotic did not enhance survival of challenged fish indoors (in aquaria).

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals

V(H). Planned Program (External Factors)**External factors which affected outcomes**

- Other (fuel costs, feed costs, weather, restrictions on interstate transport and sales of baitfish, animal rights movement)

Brief Explanation

V(l). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)

Evaluation Results

Key Items of Evaluation

Program #19

V(A). Planned Program (Summary)

1. Name of the Planned Program

Research Verification

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
307	Animal Management Systems		100%		100%
	Total		100%		100%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.5	0.0	0.0
Actual	0.0	0.5	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	28016	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Monitored commercial production facilities who adopted extension recommendations. Completed the final harvests of the verification ponds located on a commercial baitfish farm to verify the effect of feeding recommendations on fish yields and survival. Monitored a number of commercial catfish ponds to verify the effect of aeration rates on profitability of catfish production in commercial catfish growout ponds.

2. Brief description of the target audience

Arkansas catfish farmers
 Research scientists
 County Extension agents

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	250	3800	0	0
2008	232	172	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of Publications

Year	Target	Actual
2008	2	1

Output #2

Output Measure

- Number of Presentations

Year	Target	Actual
2008	4	1

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Number of commercial Arkansas baitfish farmer learning about Extension recommendations and program results
2	Number of Commercial Arkansas catfish farmers adopting Extension recommendations
3	Number of commercial Arkansas catfish farmers increasing efficiency and profitability

Outcome #1**1. Outcome Measures**

Number of commercial Arkansas baitfish farmer learning about Extension recommendations and program results

2. Associated Institution Types

•1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	90	90

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Baitfish farmers - because they want to improve their profitability

What has been done

Completed the final harvest of the verification ponds located on a commercial baitfish farm to verify the effect of feeding recommendations on fish yields and survival. Results were presented at an annual educational meeting and results were published on handouts.

Results

Baitfish producers attending the annual meeting learned about extension recommendations and their impact on fish production.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

Outcome #2**1. Outcome Measures**

Number of Commercial Arkansas catfish farmers adopting Extension recommendations

2. Associated Institution Types

•1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	2

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Catfish farmers because they want to improve their profitability

What has been done

Monitored a number of commercial catfish ponds to verify the effect of aeration rates on profitability of catfish production in commercial catfish growout ponds

Results

The verification program is not yet completed so only cooperating producers have followed the recommended management protocol to date

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

Outcome #3

1. Outcome Measures

Number of commercial Arkansas catfish farmers increasing efficiency and profitability

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Catfish farmers, because they are suffering from increases in costs that compromise their profitability

What has been done

Monitored a number of commercial catfish ponds to verify the effect of aeration rates on profitability of catfish production in commercial catfish growout ponds

Results

Cooperating producers tested various aeration rates on their farms to identify the most profitable strategies.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Other (changing prices of feed and impo)

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)

Evaluation Results

The results from the verification ponds are continually compared to the industry averages published by USDA.

Key Items of Evaluation

Production parameters from the verification ponds are collected through field sampling and results are continually compared to the industry averages published by USDA.

Program #20

V(A). Planned Program (Summary)

1. Name of the Planned Program

Aquaculture Alternatives in Arkansas

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
302	Nutrient Utilization in Animals		10%		10%
307	Animal Management Systems		50%		50%
308	Improved Animal Products (Before Harvest)		10%		10%
311	Animal Diseases		10%		10%
602	Business Management, Finance, and Taxation		10%		10%
603	Market Economics		10%		10%
Total			100%		100%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	1.3	0.0	0.8
Actual	0.0	1.0	0.0	0.9

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	100992	0	106738
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	83187	0	123016
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Conducted experiments looking at Vitamin C & E requirements in largemouth bass

Conducted water testing of salt levels for alternative crop growth

Advised clientel on other species

Developed alternative species posters

2. Brief description of the target audience

County Extension faculty, existing fish farmers and potential farmers.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	60	350	0	0
2008	452	2090	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	0	3	3

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of Peer Reviewed Journal Articles

Year	Target	Actual
2008	1	1

Output #2

Output Measure

- Number of Presentations

Year	Target	Actual
2008	2	5

Output #3

Output Measure

- Number of Published Abstracts

Year	Target	Actual
2008	2	2

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O No.	OUTCOME NAME
1	Number of Arkansans adopting sound management practices
2	Number of Arkansans Increasing Efficiency, and Profitability
3	Number of researchers and producers gaining knowledge from results from presentations and publications
4	Number of researchers that will cite results
5	Number of producers that will modify feeding and management
6	Percent decrease in cool weather mortalities and decrease in off-flavor
7	Percent of cool weather plankton-related problems that will decrease
8	Percent of warm weather plankton-related problems that will decrease
9	Number of producers willing to test successful ingredients or feeding strategies on a commercial scale
10	Percent of diets with new ingredients that are commercially available, or number of new feeding strategies implemented by industry

Outcome #1**1. Outcome Measures**

Number of Arkansans adopting sound management practices

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	150	62

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Increased foreign competition and higher feed costs are forcing farmers to reduce costs by improving management practices.

What has been done

Research and extension projects to determine and demonstrate improved methods

Results

Farms have adopted new practices leading to greater efficiency

4. Associated Knowledge Areas

KA Code	Knowledge Area
602	Business Management, Finance, and Taxation

Outcome #2**1. Outcome Measures**

Number of Arkansans Increasing Efficiency, and Profitability

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	50	37

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Increased foreign competition and higher feed costs are forcing farmers to reduce costs by improving farm efficiency.

What has been done

Research projects to determine farm management strategies that lead to increased efficiencies. Research projects to determine basic nutrient requirements and diet development strategies.

Results

Fifty three farms have adopted new management strategies. Five farmers and/or state hatcheries are using recommended diets.

4. Associated Knowledge Areas

KA Code	Knowledge Area
602	Business Management, Finance, and Taxation

Outcome #3**1. Outcome Measures**

Number of researchers and producers gaining knowledge from results from presentations and publications

2. Associated Institution Types

•1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	200	125

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Researchers and producers are trying to adopt and refine research results related to diet development for largemouth bass

What has been done

Feeding trials with largemouth bass to determine micronutrient requirements (vitamins C & E), and effect of Grobiotic to protect bass from heat stress

Results

- Preliminary information on vitamin C & E nutrition was generated and deficiency signs were defined.
- Short-term (4 weeks) feeding of largemouth bass with Grobiotic or high levels of vitamin C did not protect bass from heat stress.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

Outcome #4**1. Outcome Measures**

Number of researchers that will cite results

2. Associated Institution Types

•1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	0	3

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In time of high feed prices, anything that a farmer can do to improve efficiency will lead to lower production costs.

What has been done

During the last year, an article was written for Arkansas Aquafarming that provided information for farmers to evaluate their well pumps

Results

This provided a tool for the produce to manage their pump costs and make decision on when to replace or repair a well pump.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

Outcome #5

1. Outcome Measures

Number of producers that will modify feeding and management

2. Associated Institution Types

•1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	0	3

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Numerous request received for information about alternative species

What has been done

At this time, several producers have explored raising species other than catfish or in order to diversify their operations and explore other marketing opportunities.

Results

Over 500 acres of ponds have been stocked with largemouth bass, freshwater prawns or crayfish.

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals

Outcome #6

1. Outcome Measures

Percent decrease in cool weather mortalities and decrease in off-flavor

2. Associated Institution Types

•1890 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	5

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Catfish and baitfish farmers carryover a large quantity of fish during the cool weather. During the carry over mortalities often occur and off-flavor in catfish and algae problems with baitfish can occur. Less work has been done on this period and with these problems than during the warm weather growing season. In addition, some farmers feed catfish and baitfish more aggressively than other farmers during the cool weather season and the effects are not known.

What has been done

Sampling on four catfish farms and three ponds per farm was started in December, 2006. Sampling for baitfish farms and three pond per farm was started December, 2007. Weekly sampling was continued in catfish ponds to April, 2008 and then monthly to December 2008. Weekly sampling will continued in baitfish ponds to April 2009. A total of 2530 measurements were made in catfish ponds and 1300 baitfish measurements.

Results

Incidence of off-flavor algae in the catfish ponds for 07 and 08 was determined by all ponds combined. In 06-07 incidence was 6.9% of samples, with January having the highest incidence of 13.3%. Highest levels of off-flavor algae were found in April, with 6% of samples containing more 1000 natural units/ml of off-flavor species in the genera Anabaena and Pseudanabaena. In 07-08, the incidence was higher, 22.2%, with the high levels averaging 10% found evenly from December - April.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

Outcome #7**1. Outcome Measures**

Percent of cool weather plankton-related problems that will decrease

2. Associated Institution Types

•1890 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	50	20

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Cool weather plankton problems may be similar to warm weather plankton problems in tendency to bloom and crash and toxicity in catfish and baitfish ponds. In addition, in baitfish ponds composition of the zooplankton can affect survival of stocked fry. The cool weather plankton may be lower in abundance and relationships of zooplankton with phytoplankton and climate is not known in catfish and baitfish ponds.

What has been done

Sampling on four catfish and three ponds per farm was started in December 2006. Sampling four baitfish farms and three ponds per farm was started December 2008. Weekly sampling will continued in baitfish ponds to April 2009. A total of 2530 measurements were made in catfish ponds and 1300 baitfish measurements

Results

Data on phytoplankton and zooplankton biomass and fluctuations from the catfish ponds and baitfish ponds has not been analyzed.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

Outcome #8**1. Outcome Measures**

Percent of warm weather plankton-related problems that will decrease

2. Associated Institution Types

•1890 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	18

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Off-flavor algae during the winter may carry over into the warm weather or may influence or be related to warm weather occurrence. In addition, the farms with heavier feeding during the winter may continue in the warm weather and may impact the presence and abundance of off-flavor algae.

What has been done

Sampling on four catfish farms and the three ponds per farm was started in December 2006. Weekly sampling was continued in catfish ponds to April 2008 and then monthly to December 2008. A total of 2530 measurements were made in catfish ponds.

Results

Data is being analyzed

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

Outcome #9**1. Outcome Measures**

Number of producers willing to test successful ingredients or feeding strategies on a commercial scale

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	4	6

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Producers need basic knowledge on nutrient requirements of alternative species to select the most appropriate commercial diets available. Non-fish-meal ingredients are being used in some bass feeds. Use will escalate as fish meal has become prohibitively expensive to use in practical fish feeds.

What has been done

New diet formulations, ingredients, and feeding strategies must be tested in different species under controlled conditions to provide scientific foundation for changing existing diet formulations and feeding strategies.

Results

Willingness of producers to test successful ingredients or feeding strategies on a commercial scale.

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals

Outcome #10**1. Outcome Measures**

Percent of diets with new ingredients that are commercially available, or number of new feeding strategies implemented by industry

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	75	7

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Commercial production techniques for alternative species vary a lot relative to those for major aquaculture species.

What has been done

New diet formulations, ingredients, and feeding strategies are being tested in different species under controlled condition to provide a scientific foundation for changing existing diet formulations and feeding strategies. Feeding trials with largemouth bass to determine micronutrient requirements (vitamins C & E), and effects of Grobiotic to protect bass from heat stress

Results

Research results were provided to producers to make them aware of the potential for new diet formulations and feeding strategies. Many new diets with ingredients other than marine fish meals and oils are available, and they have been influenced by research results from many different sources. Replacement of marine fish meals and oils in diets of all cultured fish will continue to be a major research focus for fish nutritionists, and producers will be forced to adopt diets with alternative ingredients to stay economically viable.

- Preliminary information on vitamin C & E nutrition was generated and deficiency signs were defined.
- Short-term (4 weeks) feeding of largemouth bass with Grobiotic or high levels of vitamin C did not protect bass from heat stress.

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)

Evaluation Results

Key Items of Evaluation

Program #21

V(A). Planned Program (Summary)

1. Name of the Planned Program

1890 Family Resource Management

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
801	Individual and Family Resource Management		40%		0%
806	Youth Development		60%		0%
	Total		100%		0%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.6	0.0	0.0
Actual	0.0	0.6	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	34902	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

The 1890 Family and Resource Management Program conducted educational programs through a number of existing organized groups and provided information to the general public through a variety of media. Research was conducted on the financial behavior and practices of limited resource audiences. The delivery method for the education program included workshops, seminars, and tailored publications that provided information on money management written for low-literacy individuals. Articles and public service announcements were submitted to media outlets including newsletters, newspapers, TV and radio.

2. Brief description of the target audience

The 1890 Family and Resource Management Program targets youth, ages 6-18, young adults, parents, limited-resource individuals, families, farmers and faith-based and community organizations.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	300	500	200	500
2008	100	300	100	300

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	4	0	
2008	3	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Many delivery modes will be used to reach the target audiences including workshops, trainings, and events, media, community based and faith-based organization partners, and participating in local, regional and national initiatives related to promoting family financial well being. The activities will be documented including but not limited to, participant attendance and evaluations, research findings, products developed, resources and partners obtained and direct and indirect contacts made.

Year	Target	Actual
2008	1500	710

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Forty percent of the 1500 program participants will gain knowledge in managing their money.

Outcome #1**1. Outcome Measures**

Forty percent of the 1500 program participants will gain knowledge in managing their money.

2. Associated Institution Types

•1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	600	284

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Many adults and youth limited resource audiences have limited access to personal finance educational opportunities. This in part has resulted in the limited use of money management practices that can increase their ability experience financial security over their lifetime.

What has been done

Money management workshops were held for youth and adult audiences. Tailored publications for limited resource audiences were developed. Post work shop evaluations were conducted with adult audiences and pre and post workshop evaluationw were conduted with youth participants. Self-reported follow-ups by participants were received.

Results

After participating in the workshops, 98 percent indicated that the material presented was very valuable. Also, 95 percent indicated that they would change one or more financial habits as a result of the workshop such as checking credit reports annually, saving money monthly, or reducing the use of credit cards. Follow-up personal statements by 10 percent of the participants indicated that they are taking control of their finances by paying more attention to how much they spend their money, by talking to a retirement counselor at their place of employment or by having a different attitude about using credit cards. Additionally, some indicated that they have told a family member or a friend about the information they learned and others indicated that they wished they had had access to this type of information at an earlier age. Youth made money management knowledge gains ranging from 10-30%.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management
806	Youth Development

V(H). Planned Program (External Factors)**External factors which affected outcomes**

- Natural Disasters (drought,weather extremes,etc.)
- Economy
- Appropriations changes
- Government Regulations
- Competing Programmatic Challenges

Brief Explanation

Many programs compete for the same audiences. Therefore, program workshops were held in conjunction with other programs and time was limited which impacted the structure of workshops and also limited meeting repeatedly with audiences to get the results desired. After reflecting on the previous year outcomes, in the future, more extensive efforts will be made to reach underserved audiences using faith-based and community based organizations and developing a audience contact list.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Retrospective (post program)
- Before-After (before and after program)
- Comparisons between program participants (individuals,group,organizations) and non-participants
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.

Evaluation Results

There is interest by adult audiences for a variety of contact methods including 4-8 week program or monthly program and web access to information to allow more indepth coverage of topics of interest.

Key Items of Evaluation

Program #22

V(A). Planned Program (Summary)

1. Name of the Planned Program

Farm Pond and Community Fishing Pond Management

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
134	Outdoor Recreation		100%		100%
	Total		100%		100%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.4	0.0	0.3
Actual	0.0	0.6	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	81118	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	63596	0	10953
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Assisted with stocking, fertilization, and management of ponds

2. Brief description of the target audience

Commercial Hybrid Striped Bass producers
 Private impoundment owners and managers
 Extension Educators
 AGFC AR potential/current anglers HOFNOD Instructors

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	1860	10800	0	0
2008	860	8000	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of Project Annual and Final Reports

Year	Target	Actual
2008	2	0

Output #2

Output Measure

- Number of Presentations and Scientific Meetings

Year	Target	Actual
2008	2	0

Output #3

Output Measure

- Number of Published Abstracts

Year	Target	Actual
2008	2	0

Output #4

Output Measure

- Number of Refereed Journal Articles

Year	Target	Actual
2008	4	0

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O No.	OUTCOME NAME
1	Number of Research Recommendations Transferred to Arkansas Game and Fish Commission Staff
2	Number of Presentations at Scientific Meetings
3	Increase in fishing license sales in cities with AGFC programs
4	Increase in ponds that are designed, stocked, and managed correctly
5	Reduced number of pond problems
6	Percent increase in contacts regarding hybrid striped bass
7	Percent increase in requests for hybrid striped bass management recommendations
8	Percent increase in sales for sport fishing

Outcome #1

1. Outcome Measures

Number of Research Recommendations Transferred to Arkansas Game and Fish Commission Staff

2. Associated Institution Types

•1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	4	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The AGFC's family and Community Fishing Program stocks channel catfish a put and take basis biweekly from April to August at considerable per-stocking expense (manpower and vehicle costs). High cost of implementing put and tak channel catfish stocking in FCFP program

What has been done

Evaluated impact of reduced channel catfish stocking frequency (with reduced cost) on fishing success and satisfaction

Results

Recommended reducing stocking frequency to once per month to save on manpower and transportation costs.

4. Associated Knowledge Areas

KA Code	Knowledge Area
134	Outdoor Recreation

Outcome #2

1. Outcome Measures

Number of Presentations at Scientific Meetings
Not reporting on this Outcome for this Annual Report

Outcome #3

1. Outcome Measures

Increase in fishing license sales in cities with AGFC programs
Not reporting on this Outcome for this Annual Report

Outcome #4

1. Outcome Measures

Increase in ponds that are designed, stocked, and managed correctly

2. Associated Institution Types

•1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	50	28

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

There is a high cost of implementing ponds in FCFP

What has been done

Evaluated impact of reduced frequency (with reduced cost) on fishing success and satisfaction

Results

Stocking the same monthly density half as often did not affect angling success or satisfaction. Recommended reducing stocking frequency to once per month to save on manpower and transportation costs.

4. Associated Knowledge Areas

KA Code	Knowledge Area
134	Outdoor Recreation

Outcome #5

1. Outcome Measures

Reduced number of pond problems

2. Associated Institution Types

•1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	25	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
134	Outdoor Recreation

Outcome #6

1. Outcome Measures

Percent increase in contacts regarding hybrid striped bass

Not reporting on this Outcome for this Annual Report

Outcome #7

1. Outcome Measures

Percent increase in requests for hybrid striped bass management recommendations

Not reporting on this Outcome for this Annual Report

Outcome #8

1. Outcome Measures

Percent increase in sales for sport fishing

Not reporting on this Outcome for this Annual Report

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- During (during program)

Evaluation Results

Key Items of Evaluation

Program #23

V(A). Planned Program (Summary)

1. Name of the Planned Program

Aquatic Plant Management in Arkansas Ponds

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
307	Animal Management Systems		100%		100%
	Total		100%		100%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.4	0.0	0.0
Actual	0.0	0.8	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	80828	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	36853	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Largely managed control of aquatic plants by registered chemicals. Conducted and monitored fertilization regimes. Advised on biological or chemical situations.

2. Brief description of the target audience

County Extension Agents, pond managers, natural resource managers, and others.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	30	1500	0	0
2008	30	1500	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	2	0	2

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of Publications

Year	Target	Actual
2008	2	2

Output #2

Output Measure

- Number of Presentations

Year	Target	Actual
2008	5	5

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Number of farm pond owners implementing improved weed control
2	Number of farm pond owners learning how to control aquatic weeds
3	Number of farm pond owners experiencing fewer problems with aquatic weeds

Outcome #1**1. Outcome Measures**

Number of farm pond owners implementing improved weed control

2. Associated Institution Types

•1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	30	30

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

A major problem for many commercial aquaculturists and small pond owners is management of aquatic macrophytes. Thousands of acres of fishponds, livestock ponds, and ditches also have problems with aquatic vegetation. Aquatic plants thrive naturally in shallow nutrient-rich pond environments. But the natural environment is in conflict with the conditions which pond managers often seek to achieve. Aquatic plants tangle in the hooks and on the lines of recreational fishers. Aquatic plants interfere with seining of commercial ponds. Aquatic plants clog intake manifolds on pumps in reservoirs used for irrigation. Ornamental pond owners are sometimes very particular about which aquatic plants are aesthetically pleasing and which aquatic plants are unwanted.

What has been done

Total number of persons directly contacted regarding aquatic plant management in 2007 were more than 300. Total number of indirect contacts were more than 2000. During 2007, two posters and four formal workshop presentations were completed regarding aquatic plant management in Arkansas ponds.

Results

More than 100 pond owners implemented improved weed control, and over 50 pond owners reported fewer problems with aquatic weeds than in previous years.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

Outcome #2**1. Outcome Measures**

Number of farm pond owners learning how to control aquatic weeds

2. Associated Institution Types

•1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	100	100

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

A major problem for many commercial aquaculturists and small pond owners is management of aquatic macrophytes. Thousands of acres of fishponds, livestock ponds, and ditches also have problems with aquatic vegetation.

What has been done

Total number of persons directly contacted regarding aquatic plant management were more than 300. Total number of indirect contacts were more than 2000. Two posters and four formal workshop presentations were completed regarding aquatic plant management in Arkansas ponds.

Results

As a result, more than 100 pond owners implemented improved weed control, and over 50 pond owners reported fewer problems with aquatic weeds than in previous years.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

Outcome #3

1. Outcome Measures

Number of farm pond owners experiencing fewer problems with aquatic weeds

2. Associated Institution Types

•1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	20	20

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

A major problem for many commercial aquaculturists and small pond owners is management of aquatic macrophytes. Thousands of acres of fishponds, livestock ponds, and ditches also have problems with aquatic vegetation.

What has been done

Total number of persons directly contacted regarding aquatic plant management were more than 300. Total number of indirect contacts were more than 2000. Two posters and four formal workshop presentations were completed regarding aquatic plant management in Arkansas ponds.

Results

As a result, more than 100 pond owners implemented improved weed control, and over 50 pond owners reported fewer problems with aquatic weeds than in previous years.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)

Evaluation Results

Key Items of Evaluation

Program #24

V(A). Planned Program (Summary)

1. Name of the Planned Program

Improving Largemouth Bass Fishing in the Arkansas River

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
134	Outdoor Recreation		100%		100%
	Total		100%		100%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	0.0	1.3
Actual	0.0	0.0	0.0	0.9

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	69794
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Creel surveys during 2007-2008 in two pools of the lower Arkansas River

Use of computer simulation modeling to predict the influence of different management scenarios on fishery yield, harvest, and size structure.

2. Brief description of the target audience

• Fisheries managers of Arkansas The Arkansas Game and Fish Commission, Tournament largemouth bass anglers, Recreational anglers of Arkansas

- AGFC fisheries biologists
- AGFC fisheries managers.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	0	0	0	0
2008	25	50	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	0	1	0

V(F). State Defined Outputs

Output Target

Output #1**Output Measure**

- Number of Abstracts

Year	Target	Actual
2008	4	2

Output #2**Output Measure**

- Number of Presentations

Year	Target	Actual
2008	4	2

Output #3**Output Measure**

- Number of Refereed Journal Articles

Year	Target	Actual
2008	1	1

Output #4**Output Measure**

- Number of Research Reports Submitted to Stakeholders

Year	Target	Actual
2008	0	1

Output #5**Output Measure**

- Number of Non-peer Reviewed Publications

Year	Target	Actual
2008	1	0

Output #6**Output Measure**

- Number of Peer Reviewed Publications

Year	Target	Actual
2008	1	1

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O No.	OUTCOME NAME
1	The percent of AGFC fisheries biologists and managers that are informed about use of rotenone samples for scientific research topics through scientific meetings and conferences
2	Percent of AGFC fisheries biologists and managers who use the study results to solve management issues
3	Number of tournament largemouth bass anglers that learned what we know
4	Number of recreational anglers that learned what we know
5	Number of non-agency fisheries biologists that use what we know
6	Percent reduction in complaints to the AGFC regarding largemouth bass in the Arkansas River
7	Percent increase in largemouth bass tournaments on the Arkansas River
8	Number of AGFC personnel that learned what we know
9	Number of non-agency fisheries biologists that learned what we know
10	Number of AGFC personnel that use what we know

Outcome #1**1. Outcome Measures**

The percent of AGFC fisheries biologists and managers that are informed about use of rotenone samples for scientific research topics through scientific meetings and conferences

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	80	75

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

AGFC Fisheries Biologists and Managers need to know how to use rotenone sample results for management purposes.

What has been done

Rotenone sampling results have been discussed at meetings and conferences.

Results

AGFC Fisheries Biologists and Managers understand how to use rotenone survey results.

4. Associated Knowledge Areas

KA Code	Knowledge Area
134	Outdoor Recreation

Outcome #2**1. Outcome Measures**

Percent of AGFC fisheries biologists and managers who use the study results to solve management issues

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	27	40

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

AGFC fisheries biologists need information to make good decisions on management issues.

What has been done

Research on LMB populations and stocking in the Arkansas River has been presented at meetings these biologists have attended.

Results

AGFC fisheries biologists use this information to solve management issues.

4. Associated Knowledge Areas

KA Code	Knowledge Area
134	Outdoor Recreation

Outcome #3

1. Outcome Measures

Number of tournament largemouth bass anglers that learned what we know

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	30	10

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Tournament LMB anglers are concerned about LMB fishing on the Arkansas River

What has been done

Information about LMB stocking and populations has been presented to AGFC, who manages the Arkansas River, and they pass this information to anglers.

Results

Tournament LMB anglers have more information about LMB populations in the Arkansas River.

4. Associated Knowledge Areas

KA Code	Knowledge Area
134	Outdoor Recreation

Outcome #4

1. Outcome Measures

Number of recreational anglers that learned what we know

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	50	20

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Recreational anglers are concerned about LMB fishing to the Arkansas River.

What has been done

Information about LMB stocking and populations has been presented to AGFC, who manages the Arkansas River, and they pass this information to anglers

Results

Recreational anglers have more information about LMB populations in the Arkansas River.

4. Associated Knowledge Areas

KA Code	Knowledge Area
134	Outdoor Recreation

Outcome #5

1. Outcome Measures

Number of non-agency fisheries biologists that use what we know

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	40	10

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Non-agency fisheries biologists; LMB management in the resources they manage

What has been done

Information and research results have been presented at meetings these biologists attended; AGFC also passes along this information.

Results

Non-agency fisheries biologists information can better manage the resources they handle.

4. Associated Knowledge Areas

KA Code	Knowledge Area
134	Outdoor Recreation

Outcome #6

1. Outcome Measures

Percent reduction in complaints to the AGFC regarding largemouth bass in the Arkansas River

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	10

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

AGFC would like to reduce the number of complaints about LMB fishing on the Arkansas River

What has been done

Research on LMB populations and stocking has been presented to AGFC, who passes this information to the anglers.

Results

There is a reduced number of complaints to AGFC about LMB on the Arkansas River

4. Associated Knowledge Areas

KA Code	Knowledge Area
134	Outdoor Recreation

Outcome #7

1. Outcome Measures

Percent increase in largemouth bass tournaments on the Arkansas River

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	3	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Organizers of LMB fishing tournaments would like to increase the number of tournaments on the Arkansas River

What has been done

Research on LMB stocking and populations is presented to AGFC and other interested biologists, who then pass this information along to anglers and tournament organizers

Results

An increased number of fishing tournaments on the Arkansas River

4. Associated Knowledge Areas

KA Code	Knowledge Area
134	Outdoor Recreation

Outcome #8

1. Outcome Measures

Number of AGFC personnel that learned what we know

2. Associated Institution Types

•1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	30	75

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

The Arkansas Game and Fish Commission, tournament bass anglers, and recreational bass anglers, and recreational bass anglers are concerned with the status of largemouth bass in the Arkansas River.

What has been done

Prior to this project, the Director of the Commission was planning to produce more largemouth bass fingerlings and larger largemouth bass fingerlings for supplemental stocking of the Arkansas River. Because of this project, the Commission has not devoted a larger portion of their hatchery resources to largemouth bass fingerlings production.

Results

The size at which largemouth bass fingerlings are stocked has remained at ~50 mm rather than ~100mm. Both of these outcomes have allowed Commission hatchery resources to be focused on other critical issues, without a resultant decline in the quality of largemouth bass fishing in the Arkansas River.

4. Associated Knowledge Areas

KA Code	Knowledge Area
134	Outdoor Recreation

Outcome #9**1. Outcome Measures**

Number of non-agency fisheries biologists that learned what we know

2. Associated Institution Types

•1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	40	85

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Non-agency fisheries biologists want to learn more about LMB management

What has been done

Information about LMB stocking and populations in the Arkansas River has been presented at meetings these biologists have attended; AGFC also passes along this information.

Results

Non-agency fisheries biologists learned more about LMB management.

4. Associated Knowledge Areas

KA Code	Knowledge Area
134	Outdoor Recreation

Outcome #10

1. Outcome Measures

Number of AGFC personnel that use what we know

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	7	18

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

AGFC personnel need this information for management issues involving LMB on the Arkansas River

What has been done

AGFC personnel attend meetings where results of our research is presented.

Results

More AGFC personnel can use the research results for Arkansas River LMB management issues.

4. Associated Knowledge Areas

KA Code	Knowledge Area
134	Outdoor Recreation

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy

Brief Explanation

Political, public relations, and economic factors are involved in almost any management adopted by AGFC (our primary stakeholder)

If AGFC research priorities change in the next few years, medium-term and long-term outcomes listed above could change also.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)

Evaluation Results

Evaluation of this research not done in the traditional sense - there is no management being conducted at this time - data collection entails filling information gaps for Arkansas River bass fisheries

Key Items of Evaluation

Sampling recreational anglers to generate catch, harvest, and effort statistics for the Arkansas River bass fishery

Description - 12 month creel survey conducted using bus-route design, tag-rewards study being conducted to assess angler catch and harvest

Program #25

V(A). Planned Program (Summary)

1. Name of the Planned Program

Water and Environmental Quality

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
111	Conservation and Efficient Use of Water		20%		20%
112	Watershed Protection and Management		20%		20%
133	Pollution Prevention and Mitigation		20%		20%
204	Plant Product Quality and Utility (Preharvest)		20%		20%
403	Waste Disposal, Recycling, and Reuse		20%		20%
	Total		100%		100%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	1.1	0.0	1.3
Actual	0.0	0.5	0.0	0.5

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	92468	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	79915
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Hired a graduate student to work with the swine waste treatment system. He will investigate the following areas: Compare the water quality improvement process that occurs in a lagoon and constructed wetland (total N, turbidity, pH, DO2, phosphorus); monitor levels of total nitrogen contained in the lagoon and constructed wetland on the UAPB Farm, for one year; analyze the results of a one year study to document how nitrogen levels fluctuate; compare the average monthly levels of nitrogen to that of EPA / Arkansas standards mentioned in Reg. No.6; determine whether the U.A.P.B. Swine Waste Treatment Facility is in compliance; compare variances in monthly nitrogen levels with temperature, weather, animal activity; assess the quality of the water being recycled to the pasture, this ensures the safety of the livestock.

Develop hill-slope runoff model output for the farm watershed using the APEX model (similar to EPIC).

Conduct at least one Swine Waste Treatment System Outreach/Demonstration Meeting each year.

Conduct at least one Farm Water Quality Improvement Outreach/Demonstration Meeting each year.

Complete one peer reviewed research article every two years. Complete one fact sheet every year.

Document the number of small, local and limited resource farmers that have been assisted with swine waste treatment, odor and/or water quality issues each year.

2. Brief description of the target audience

The target audience includes but is not limited to small, limited resource landowners, underrepresented communities, and families.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	100	200	50	100
2008	43	240	26	110

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	3	0	3

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Complete one peer reviewed research article every two years.

Year	Target	Actual
2008	0	3

Output #2

Output Measure

- Document the number of small, local and limited resource farmers that have been assisted with swine waste treatment, odor and/or water quality issues each year.

Year	Target	Actual
2008	5	3

Output #3

Output Measure

- Complete one fact sheet regarding water quality, swine waste management or environmental stewardship each year.

Year	Target	Actual
2008	1	1

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	The number of conservation practices utilized by swine farmers as a result of this project is an outcome measure.
2	Increase awareness of environmental issues and policies that pertain to operating small swine farms.

Outcome #1**1. Outcome Measures**

The number of conservation practices utilized by swine farmers as a result of this project is an outcome measure.

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	0

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Farmers tend to be good stewards of the land, especially if they own the land. Farmers care about both the commodity they are raising and the condition of the land which is their livelihood.

What has been done

We are currently preparing for this year's field day. We will demonstrate water conservation techniques in pasture conditions and water quality improvement techniques with wetlands.

Results

We hope to directly reach 200-300 small farmers, a percentage of which may currently raise hogs.

4. Associated Knowledge Areas

KA Code	Knowledge Area
133	Pollution Prevention and Mitigation
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
204	Plant Product Quality and Utility (Preharvest)
403	Waste Disposal, Recycling, and Reuse

Outcome #2**1. Outcome Measures**

Increase awareness of environmental issues and policies that pertain to operating small swine farms.

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	4	0

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

What has been done**Results****4. Associated Knowledge Areas**

KA Code	Knowledge Area
112	Watershed Protection and Management
111	Conservation and Efficient Use of Water
204	Plant Product Quality and Utility (Preharvest)
403	Waste Disposal, Recycling, and Reuse
133	Pollution Prevention and Mitigation

V(H). Planned Program (External Factors)**External factors which affected outcomes**

- Natural Disasters (drought, weather extremes, etc.)
- Public Policy changes

Brief Explanation

There were no external factors which adversely affected the outcome.

V(I). Planned Program (Evaluation Studies and Data Collection)**1. Evaluation Studies Planned**

- During (during program)

Evaluation Results

Data was collected on the flowering potential of each cana variety for 5 weeks. During this time period we monitored flowering potential from the time the flower bud appeared and the flower opened completely until the flower died.

The average life span of each canna variety are as follows: *Hybrid Karchesky* 11.25 days, *Mystique* 1 day, *Omega* 4 days, *Indica orange/red* 6 days, *Intrigue* 4 days, *Scarlet's Rib* 6 days, *Indica purpurea* 5 days, *Firecracker* 8 days, *Old Red* 2 days, *Indica kress* 8 days, *Skyhawk* 5 days, and *Red Bird* 5 days. The plant with the longest life span was the *Hybrid Karchesky* at 11 days, and the plant with the shortest life span was *Mystique* at 1 day.

Regarding water lilies, three varieties (*Nymphaea colorado*, *Nymphaea lemonmist* and *Nymphaea odorata*) were planted in a random block design in a wetland cell which is also a component of the Swine Waste Treatment System. Nine weeks after planting, the water lilies began to produce flowers. Water lily flowers bloomed on average five days after the bud opened. Preliminary cut flower results show that the flowers lasted on average five days in the pond before they closed. When the flowers were cut they lived two to three days after being removed from the pond. Water quality work is ongoing.

Key Items of Evaluation

Water lilies have potential for both water quality improvement in constructed wetland settings and cut flower production. Work is ongoing for both water quality and bloom quality.

Program #26

V(A). Planned Program (Summary)

1. Name of the Planned Program

Youth Fishing and Aquaculture Education

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
806	Youth Development		100%		100%
	Total		100%		100%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.6	0.0	0.0
Actual	0.0	0.1	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	7518	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Provided assistance with county, regional, and state 4-H O'ramas. Assisted with career days and UAPB's Aquatic Sciences Day.

2. Brief description of the target audience

Youth

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	150	100	1100	100
2008	50	80	320	125

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Conducted workshops that included new or improved sportfishing and aquatic curriculums incorporating baitcasting and reel into sportfishing competitions

Year	Target	Actual
2008	{No Data Entered}	40

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O No.	OUTCOME NAME
1	Number of County Extension agents using the aquatic education fishing trailer for youth fishing activities
2	Number of students participating in events related to the aquatic education fishing trailer for youth fishing activities
3	Number of students participating in specific aquatic education events, such as 4-H O'Rama Events, aquatic and fishing workshops, and educational derbies
4	Number of County Agents using the fishing education modules
5	Number of students participating in events involving the fishing education module
6	Number of tilapia delivered to teachers
7	Number of teachers using tilapia
8	Number of teachers receiving aquaculture education newsletter
9	Number of schools visited annually
10	Number of contacts by email and telephone calls from teachers related to recirculation systems
11	Number of teachers participating in aquaculture workshop

Outcome #1**1. Outcome Measures**

Number of County Extension agents using the aquatic education fishing trailer for youth fishing activities

2. Associated Institution Types

•1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	25	15

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Youth education is an integral part of a comprehensive education program at the local/county level. It is the role of Extension Specialists to augment that effort.

What has been done

The Aquaculture/Fisheries Department maintains a fishing education trailer for county agents to use for youth activities.

Results

Fifteen County Extension Agents have taken advantage of the opportunity to use the fishing trailer.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #2**1. Outcome Measures**

Number of students participating in events related to the aquatic education fishing trailer for youth fishing activities

2. Associated Institution Types

•1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	1300	1000

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Aquatic resource education enhances a students' respect for their environment and respect is gained for outdoor type activities.

What has been done

The Aquaculture/Fisheries department makes available the aquatic education fishing trailer for youth fishing activities.

Results

One thousand youth have had the opportunity to utilize the fishing trailer.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #3

1. Outcome Measures

Number of students participating in specific aquatic education events, such as 4-H O'Rama Events, aquatic and fishing workshops, and educational derbies

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	200	475

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Respect for the environment and aquatic resources is important for youth.

What has been done

O'Rama events were held at the county level, Chicot County, referred to locally as Big B Day. Also, a career fair day at a local school in Crossett, AR. Additionally, the Aquatic Sciences Day was held at the UAPB Aquaculture/Fisheries Research Center where twelve schools participated in various aquatic related events.

Results

At the county level, thirty youth participated in the baitcasting activity. Additionally, 385 youth participated in events at the Aquatic Sciences Day.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #4

1. Outcome Measures

Number of County Agents using the fishing education modules

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	15	15

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Aquatic resource education is an important part of a county's educational program.

What has been done

The fishing education module is made available through the Department of Aquaculture and Fisheries for use in the education programs.

Results

Fifteen County Agents have used the education modules.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #5

1. Outcome Measures

Number of students participating in events involving the fishing education module

2. Associated Institution Types

•1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	150	150

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Aquatic resource education is an important part of the development of a student.

What has been done

Fishing education modules are made available through the Department of Aquaculture and Fisheries.

Results

About 150 students have participated in events involving the fish education module.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #6

1. Outcome Measures

Number of tilapia delivered to teachers

2. Associated Institution Types

•1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	1000	1000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Tilapia are better suited for use in recirculating systems

What has been done

UAPB provides tilapia for these systems

Results

Fish are picked up and delivered from the UAPB facility. There are many of these systems in operation in Arkansas schools

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #7

1. Outcome Measures

Number of teachers using tilapia

2. Associated Institution Types

•1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	10	10

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Tilapia are excellent fish for such systems have resistance to water quality and disease problems

What has been done

Tilapia are obtained at the UAPB Aquaculture Facility

Results

About ten teachers are using tilapia in these systems

4. Associated Knowledge Areas

KA Code	Knowledge Area
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Outcome #8**1. Outcome Measures**

Number of teachers receiving aquaculture education newsletter

2. Associated Institution Types

•1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	25	25

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Arkansas Aquafarming is a newsletter developed by the UAPB Aquaculture/Fisheries Center. The publication is research journal quality.

What has been done

The publication is available worldwide electronically and hard copies upon request. These are distributed through the County Extension Service

Results

Twenty five teachers are receiving this newsletter to use the helpful information in classrooms.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #9**1. Outcome Measures**

Number of schools visited annually

2. Associated Institution Types

•1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	5	5

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Many students are not aware of the Aquaculture/Fisheries program and the many opportunities they can receive through the program

What has been done

Visits are made to local schools with agriculture/science programs

Results

Students were made aware of the Aquaculture Program and programs that are made available to them for participation like the Aquatic Sciences Day

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #10

1. Outcome Measures

Number of contacts by email and telephone calls from teachers related to recirculation systems

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	200	200

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Recirculation systems are a good avenue to teach students aquatic education hands on. These units are smaller than ponds and are not expensive to operate.

What has been done

Personal visits were made to the local high school recirculation system project. Additionally, answered eight requests for information on operation of these systems.

Results

We were able to solve production and water related problems. Calls were to advise schools on where to locate tilapia for these systems and problems that may be encountered.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #11

1. Outcome Measures

Number of teachers participating in aquaculture workshop

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	20	20

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Aquaculture is a well established industry in Arkansas. Workers for this industry need training and the vocational agriculture program is an excellent means to receive such training.

What has been done

Annual workshops are for Arkansas Vocational Agriculture Instructors.

Results

Twenty plus instructors participated in the workshops provided.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)

Evaluation Results

Key Items of Evaluation

Program #27

V(A). Planned Program (Summary)

1. Name of the Planned Program

Cropping Systems

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
205	Plant Management Systems		100%		100%
	Total		100%		100%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	2.8	0.0	0.5
Actual	0.0	2.3	0.0	0.5

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	96807	0	34424
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	418192	0	35182
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Demonstrations on BMPs will be conducted at the SFO-WWMC site. Field days will be held to present findings and show demonstrations at the SFO-WWMC. Relevant information will be provided to field day participants and to other interested individuals.

A demonstration was done to compare the growth of conventional soybeans (Hutchinson) to soybeans with round-up ready technology (Delta Grow 5830 RR) under normal field conditions rather than in small plots. The Hutchinson variety was produced on a 7.2 acre field and the Delta Grow 5830 was grown on a 25 acre field.

A second demonstration compared the growth of soybeans (Delta Grow 5970 RR) on two precision leveled fields. Field 1 has a zero grade and field 2 has a .1 ft./100 ft. grade. Each field contains 28 acres.

A field day was held on September 4, 2008 during the remnants of hurricane Gustav with about 175 individuals attending. Yield data was taken on each field and expressed on a per acre basis. This data will be disseminated at a later date.

2. Brief description of the target audience

LRF and SDF serviced by the UAPB as well as other farmers who attend field days and/or visit the SFO-WWMC. Other audiences include policy makers, Extension educators, Natural Resources Conservation Service employees, U. S. Army Corps of Engineers employees, home owners and the general public.

Individuals representing the following groups attend the filed day: farmers, the general public, elected officials, community leaders, the Natural Resources Conservation Service, Cooperative Extension Program, Cooperative Extension Service, the U. S. Army Corps of Engineers, Rural Development, U. S. Forest Service, and State Agencies.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	500	1000	400	400
2008	1398	800	1367	900

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- 1. The number of site visits by farmers 2. The number of participants that attend field days 3. Number of fact sheets developed 4. Annual Reports 5. Number of presentations made at meetings for interested groups 6. Number of partnerships developed

Year	Target	Actual
2008	60	10

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Short term outcome will be measured by the number of LRF and SDF that attend field days and observe BMP demonstrations and the knowledge gained by participants.

Outcome #1**1. Outcome Measures**

Short term outcome will be measured by the number of LRF and SDF that attend field days and observe BMP demonstrations and the knowledge gained by participants.

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	60	10

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Farmers are always looking for ways to cut production cost and improve yield because this improves income and enhances sustainability. Reducing the use of chemicals and other inputs in farm production while maintaining yield, enhances the environment due to pollution abatement.

What has been done

Two demonstrations were conducted to show a side by side comparison of different cropping systems. This was the first year of the study.

Results

The conventional soybeans yield 41.66 bu/acre at a cost of \$244.16/acre while the round-up ready soybeans produced 52 bu/acre at a cost of \$203.26/acre. The average price earned for soybeans was \$7.75/bu. The net income realized for the conventional beans was \$78.71/acre while that for the round-up ready soybeans was \$199.74/acre. Thus, a farmer could have increased his income by 2.5 times while using less chemicals and making fewer trips across the field.

The zero grade field yield 36.72 bu/acre while the .1 grade field yield 45.8 bu/acre. This yield difference was likely due to the deep cuts made on the zero grade field. The soil will need additional amendments to restore the production capacity. The net income for the zero grade field was \$64/acre while that of the .1 grade field was \$107/acre.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems

V(H). Planned Program (External Factors)**External factors which affected outcomes**

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Competing Programmatic Challenges

Brief Explanation

Heavy rain before and during the field day prevented many participants from coming to the field day. We were not able to get into the fields to view the plot work.

V(l). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- During (during program)

Evaluation Results

Key Items of Evaluation

Program #28

V(A). Planned Program (Summary)

1. Name of the Planned Program

1890 Family and Child Development Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
802	Human Development and Family Well-Being		40%		0%
806	Youth Development		60%		0%
	Total		100%		0%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	1.6	0.0	0.0
Actual	0.0	0.2	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	262685	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	183631	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Two focused program areas were addressed in the 1890 Family and Child Development Program. These included Teens on the Go and the Young Scholars Program. The Teens on the Go is a newsletter series that has been developed for the last 30 years for students in grades 7-12. The Young Scholars Program is in its 13th year and is implemented in a housing project in Monroe County. The children meet 5-days a week in an after school program that emphasizes math and science skills through human sciences and agriculture subject matter. Parents with children enrolled in the Young Scholars Program meet weekly and focus on parenting education, stress management, coping, and job-related skills, family relationships, and economic- and self-sufficiency skills.

2. Brief description of the target audience

The target audience in the 1890 Family and Child Development focused programs included: Teenagers in grades 7-12 for the newsletter, Teens on the Go and parents and their children who live in a housing project in Monroe County for the Young Scholars Program.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	68	0	72	10000
2008	78	0	95	10000

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	2	0	
2008	2	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- We will provide math and science workshops for children in the Young Scholars Program. Parents will receive training in parenting, stress management, money mangement, child development, and job-related and coping skills.

Year	Target	Actual
2008	162	173

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Forty percent of children in the Young Scholars Program will have an increase in school performance and forty percent of families will report being able to meet the financial obligations of their families.

Outcome #1**1. Outcome Measures**

Forty percent of children in the Young Scholars Program will have an increase in school performance and forty percent of families will report being able to meet the financial obligations of their families.

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	62	82

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Forty-seven percent of the state's minority children live in single parent families. They are more likely to be poor and raised without the support of a father in the home. The Family and Child Development programs work toward solutions for these issues and to make live better for families and children.

What has been done

A newsletter series, Teens on the Go, was offered to teenagers in 7-12 grades to arm them with decision making skills for facing critical issues that impact their lives. An after school program was conducted for low-income minority children and their parents who live in a housing project in Monore County.

Results

Ninety-five children were reached in the Young Scholars Program. Of this number forty-seven percent passed the bench-mark test in school. Forty-two percent of students made the honor roll in 2008. Thirty three percent of parents (78 parents reached) reported being able to meet financial obligations. Total contact with youth who received Teens on the Go exceeded 60000. Evaluations from teens indicated that the newsletter series aided them in making better decisions regarding critical issues they face.

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being
806	Youth Development

V(H). Planned Program (External Factors)**External factors which affected outcomes**

- Economy
- Appropriations changes
- Populations changes (immigration, new cultural groupings, etc.)
- Other (Competing programs)

Brief Explanation

Competing after-school programs in the public schools in Lee County eventually caused the closing of the program. The enrollment was not sufficient to sustain the program.

V(I). Planned Program (Evaluation Studies and Data Collection)**1. Evaluation Studies Planned**

- Before-After (before and after program)
- During (during program)
- Case Study

Evaluation Results

Forty-two percent of children in the Young Scholars program made the honor roll. Thirty three percent of parents enrolled in the program reported being able to meet financial obligations. Parents tend to have food that last to the end of the month.

Key Items of Evaluation

Program #29

V(A). Planned Program (Summary)

1. Name of the Planned Program

Arkansas Ag Adventures - Agricultural Awareness

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
806	Youth Development		100%		100%
	Total		100%		100%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	0.5	1.1	0.0	0.0
Actual	0.0	0.6	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	36413	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Activities include classes, field days and demonstrations at the UAPB Small Farm Outreach and Water Management Center (UAPBSFOWMC), camps at the Arkansas 4-H Center, exhibits at educational fairs/conferences, and community and classroom workshops. These activities were offered to elementary and high school students, community youth groups, and adults.

2. Brief description of the target audience

Although all youth and adults can be a part of the program, however, special emphasis is given to youth in grades 4-6 and their formal educators. In addition to school children, large number of home school students participated in the programs and activities of the center.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	110	10	2250	200
2008	0	0	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- To increase the understanding of agriculture and its benefits to the general public.

Year	Target	Actual
2008	350	0

Output #2

Output Measure

- To encourage youth to seek careers in agriculture, math, science and engineering through field days at the farm.

Year	Target	Actual
2008	7	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	To increase the understanding of agriculture and its benefits to the general public.
2	To encourage youth to seek careers in the fields of agriculture, science, math, engineering, and technology through field days at the center.

Outcome #1

1. Outcome Measures

To increase the understanding of agriculture and its benefits to the general public.

2. Associated Institution Types

•1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	350	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #2

1. Outcome Measures

To encourage youth to seek careers in the fields of agriculture, science, math, engineering, and technology through field days at the center.

2. Associated Institution Types

•1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	7	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Retrospective (post program)
- Before-After (before and after program)
- During (during program)

Evaluation Results

A total of 41 sessions were conducted of which 29 were held at the center and the remaining 12 were conducted in various locations in the state.

Key Items of Evaluation